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ABSTRACT

Described is a course or workshop designed to sensitize individuals to their roles as participants in the natural and man-made environment. The course can be used as a college course for pre-professional or general training, as a pre-service or in-service course for teachers, or as a workshop for adults. The learning experiences included in this document are adaptable for high school. The document itself contains the goals and purposes of the course, as well as a discussion of the conceptual strands that underly the teaching strategies. Each lesson includes the objectives of the lesson, the author's point of view, a listing of needed materials, a selection of learning experiences, a sharing of experiences, an objectives check list, further explorations, and a listing of resource materials. The 26 lessons are grouped into six major themes: (1) Orientation; (2) Reception and Organization of Sensory Data; (3) Examples of Order in the Environment; (4) Man in Community; (5) Choices Between Individual and Group Needs; and (6) Synthesis. (MA)

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(ENVIRONMENTAL) ENCOUNTER

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Prepublication

ENVIRONMENTAL ENCOUNTER
Decision Making for the Built and Natural Environment

Course or workshop for adults
College course for pre-professional or general training
Pre-service or in-service course for teachers
Learning experiences adaptable for high school

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COURSE CONTENTS

INTRODUCTION

POINT OF DEPARTURE
OVERVIEW
USING TEACHING STRATEGIES TO CONVEY IDEAS AND INFORMATION
CONCEPTUAL STRANDS UNDERLYING THE TEACHING STRATEGIES

ORIENTATION

1. SPACIAL HISTORY
Understanding that environment effects self

Recall of places from the participants' past and present experience to demonstrate the impact of spaces upon the activities which occur within them.

2. CREATING A PERSONAL SPACE
Becoming aware of ability to effect environment

The participant builds spaces in cardboard to evoke a particular response; thus he begins to judge and value all spaces.

RECEPTION AND ORGANIZATION OF SENSORY DATA

3. SENSORY PERCEPTION
Receiving and interpreting information

Exercises to stimulate understanding of sensory reception and perception culminate in activities to discern the impact of the environment on the senses.

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The participant as agent-designer explores the characteristics of media-clay and bread- to learn to value the process of creating as well as the product.

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The participants organize data in two-dimensions as an introduction to comprehending the function of all order, and to developing the ability to evaluate order in the environment.

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Form: Ordering of components into a whole

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14. NATURE
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15. SEQUENCE OF SPACES
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INTRODUCTION TO SECOND PART OF COURSE

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21. CITY
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22. PUBLIC AND PRIVATE VALUES
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23. PUBLICALLY USED ENVIRONMENTS
The functional and psychological impact of public space

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24. MAN-MADE AND NATURAL ENVIRONMENT
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Role-playing the development of a natural, into a man-made environment to consider alternatives in working with nature.

25. CHANGE
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26. A VIEW OF THE ENVIRONMENT AS A WHOLE
Analyzing components within the whole

Summarizing experiences requiring participants to apply ideas, points of view and information presented in the course.

PEDAGOGY

OUR POINT OF DEPARTURE is a concern for that part of our environment in which man spends ninety percent of his time and in which he is the principle building agent....the man-made environment. Man's awakening concern with ecology encourages us. Still, a more holistic awareness is missing. The relationship of the man-made to nature's systems, and even more paramount, man's relationship to both must be seen as parts of a whole.

Central to any comprehensive understanding must be man's awareness that he is in a dynamic relationship with an environment which is not static, but which is part of the dynamic process.

OUR POINT OF DEPARTURE is the individual and how he relates with the dynamic environmental systems. Man vaguely feels that the environment effects his life, but rarely is he conscious of how is effects him. Still more rarely is he able to identify the qualities and processes of that envrionment so that he can institute appropriate change. Churchill's statement, "We shape our buildings and then they shape us," could read, "The shape of our environment shapes us."

This course is organized to bring into focus those aspects of environment which normally lie just outside of the periphery of consciousness, yet effect us all in our ability to lead a more inclusive life.

YOUR POINT OF DEPARTURE will automatically become part of the course, the basis for each learning experience is an activity model. How the learning experience is handled and the direction of conversations will come from you, the instructor, and your participants. Therefore your frame of reference and that of the participants becomes an integrated part of the whole. This is our hope. We do not see how it can be otherwise because you are beginning where you and the participants are and relating experiences and information to personal needs to know.

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OVERVIEW

The course begins with the participant's awareness of himself as a sensory being, then widens and deepens the focus to include the participant in the community and finally in the context of environment in its broadest sense.

The theme of each Teaching Strategy, or lesson, has a wide variety of corollary ideas. (See COURSE STRANDS) Some of these are emphasized in the presented materials, others you may wish to explore. As the course develops, ideas appear and reappear as strands which permeate and tie together the learning experiences. Any one of these strands, or perhaps others, could be used as the basis for sequencing the teaching strategies. We have chosen the following:

Orientation

Members of the class are introduced to the idea that they are participants and that each has much from his own past experience to bring to this course. Thus, each participant analyzes with the group why physical spaces have meant a great deal to him at different periods of his life and then builds a full-size space having the qualities of his choosing.

Receiving and Organizing Sensory Data

The individual makes contact with the external world through his sensory receptors. Teaching Strategy 3 explores sensory stimulation, a process one undergoes continuously, but is only occasionally aware of on a conscious level. To avoid "over-load" of sensations, the individual, usually unconsciously, orders these sensory "receptions" into "perceptions," or groupings. Although the individual is receiving thousands of stimuli at any given moment, his sense of "perception" of well-being might include "touching" a seventy-three degree atmosphere, "seeing" a light level appropriate to his task, "tasting" a clean mouth, "smelling" an undefinable familiar odor of his home, and "hearing" familiar household noises - a mixture of air-conditioning hum and family voices.

Teaching Strategies 4 through 10 dissect undifferentiated perceptions to demonstrate what techniques the individual is actually using, consciously or unconsciously, to order sensory stimuli and thus save himself from sensory chaos.

Strategies 11 through 15 examine ordered wholes: small objects,

larger man-made environments, and nature. The individual articulates his feeling response ("I like it," or perhaps "I don't like that.") sorting out associations ("My Grandmother's was just the same.") from how the parts function to form a "successful" composition. The class then builds a full-scale Space Maze, or environment which they consciously design to stimulate sensory experience.

Seeking Community

Man's functional, psychological and social needs cause him to seek a community in which to live. Neighborhood, and the larger urban environment, are examined from the point of view of how they effect the individual and he effects them.

Solving Individual and Group Needs

Choices must be made in building environments which in our society sometimes bring into conflict public and private values. Being both "private" individual and "public" citizen, the participant must evaluate any project as to what he gets from a public point of view and a private point of view. Environmental problems are complicated to solve in a world that appears to move faster and faster beyond one's personal control.

Synthesis

Having gone through exaggerated Learning Experiences, isolated and simplified so they could be easily perceived, the participant takes a holistic view of the environment as he analyses it in this final Teaching Strategy. Synthesis is a summing up and a beginning. It is a beginning because this course just gets him started; he spends his whole life increasing his breadth of experience and sharpening his tools for living.

USING TEACHING STRATEGIES TO CONVEY IDEAS AND INFORMATION

A Teaching Strategy may take from one to three hours to accomplish. Generally speaking, adults can accomplish an experience in an hour that takes younger people two to three hours to execute. Because the Teaching Strategies build on each other, spiraling with the participants' growth and insight to increasing levels of complexity; they are best used in a structured sequence, although not necessarily the one herein presented. In laying out a course or workshop, you may wish to leave enough time to pursue spontaneously an activity such as "Creating A Personal Space." Each Teaching Strategy suggests one or more Learning Experiences which have been tested and found to carry the "messages" expressed in the authors' POINT OF VIEW. The Learning Experiences exaggerate their effect to make unavoidably visible the process the participant goes through and the concepts expressed in the POINT OF VIEW.

There are undoubtedly other experiences which would carry the same messages and which might well fit your class' needs better. As you think of them, write them down, check them against the concepts you wish to convey, and try them out. Try to experience these Learning Experiences yourself, as a participant.

By watching the response from the class, you can ascertain your participants' level of understanding. By asking leading questions from where they are, you will leave them more likely to integrate their new perceptions and information into their active knowledge bank.

An intergral part of the learning experience is the seemingly casual conversation that takes place during it. Here is the best opportunity for you to learn "where the participant is" and make him feel part of the proceedings. Your Leading Questions cause the participant to probe and to discover how he learns from experience. The course does not so much supply answers as it provokes questions and helps make the participant's learning process visible to him.

Listing of comments on the blackboard is effective in involving the class and holding a course of direction. It encourages them to continue to participate on a more personal level, therefore on a level more meaningful to them. It is not necessary, perhaps not even desirable for the participant to have the materials from which you are working. He may wish to take notes during the Learning Experience, using the comments on the board as major points for him to organize from and later summarize the whole. It is desirable to spend time at the completion of each Learning Experience going back over the more important concepts and information that came out

during the discussion.

The particular emphasis in discussion of how, why and in what ways the experience had an effect are for you and the participants to direct. The blank space is for your notes, your records of experiences and your additions and changes. This is why the course has your point of departure. Both you and the paricipants are encouraged to relate each topic more broadly and deeply to your personal and professional needs than has been indicated in the Teaching Strategies.

YOU YOU'RE HOW DO I KNOW I'M SUCCEEDING?

You will find it helpful to insure that the POINT OF VIEW underlying each Teaching Strategy is verbalized in some manner following the Learning Experiences. By discussion or written assignment the experiences are put into context so that they can be related cognitively to other experiences and ideas.

You will know you are succeeding by the participants' enthusiasm and increasing degree of involvement, by their own questions and responses which show increasing insight into the relationships of the concepts underlying the experiences. Certain Learning Experiences, placed appropriately in the course sequence, are "experiential tests" which gauge ability to apply the information and perceptions the participant has learned.

WHY TEACH/TAKE THIS COURSE

Although this method of teaching may seem the long way around compared to giving a lecture, it is an appropriate method for an introductory course. Participants come out of the course with more permanent, usable information than students taking an introductory course presented in the tradition method. Participants themselves say that the course emphasis on the participant as his own resource gives them a sense of accomplishment and satisfaction. They realize how much knowledge and experience they already have and are now learning how to draw upon, thereby making it usable. The course also gives the participant a backbone on which he can organize new information which he acquires from any and all sources. He then is able not only to relate, but to take responsibility for, his decisions and actions. As one student said:

> "In fact, everyone should partake of such a course in order to be better acquainted with his surroundings his fellow human beings, and himself."

A faculty member stated its value for him as follows:

> "Perhaps the most important feature of the course is simply that it has been so fresh, so enjoyable, and so related to past and present experience, that I have become deeply involved in it."

CONCEPTUAL STRANDS UNDERLYING THE TEACHING STRATEGIES

Environmental decisionsshould be based on consideration of many factors. Economic factors and special interest groups have tended to dominate environmental decision making, although plant and animal preservation are increasingly considered. Consideration also needs to be given to the impact of environmental decisions directly on thequality of man's life, his physical and psychological well being.

A major goal of the course is to bring these additional factors to a level of cognitive awareness so they,too, may be weighed in the decision making process. These factors often include variables which we have few tools to measure and theories from which to predict the consequences of a decision. There are, however, some generalizations which seem valid. These are brought up specifically at various points in the course, but most of them underly almost every choice or decision one makes.

COMMUNICATION ABOUT THE ENVIRONMENT IS DIFFICULT. Verbal communication is limited to language, a linear process in time. Language as symbolic activity constricts the ability to comprehend and communicate any whole experience.

VISUAL COMMUNICATION ABOUT ENVIRONMENT ALSO IS DIFFICULT. It is a two dimensional communication about a four dimensional subject. The third dimension and time both make it impossible to portray an environment completely in a photograph or drawing. One must be taught the conventions of portrayal in order to "read" two dimensional drawings. The many stimuli other than visual are missing.

TO ESTABLISH ORDER IN OUR ENVIRONMENT, WE MUST UNDERSTAND AND BE ABLE TO COMMUNICATE OUR OWN NEED FOR ORDER. We seek order for psychological and physical comfort. We constantly strive to relieve anxiety, consciously and/or unconsciously, through comprehension of our personal relationship with at least our immediate environment. At home we sink contentedly into "our" chair.

OUR ONLY CONTACT WITH OUR ENVIRONMENT IS THROUGH OUR SENSE RECEPTORS. These are our visual, aural, tactile, olfactory, gustatory, kinesthetic and proprioceptive senses. Automatically stimuli <u>received</u> by our receptors are <u>perceived</u> in patterns. Sound

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waves impinge on our ears as discrete high frequencies: they may be perceived as a scream.

PERCEPTION IS RECEPTION PLUS ASSOCIATION. For a United States citizen, to perceive the Star Spangled Banner is to hear this music and stand up. To a citizen of Java, the music might be perceived as Western, but he would have no association motivating him to rise.

To the Westerner, the frequencies which make up Javanese music may be received, but its patterns perceived only as being foreign, with no other association.

DISCOVERING PATTERNS IS A WAY TO FIND ORDER. Making this process conscious is the first step toward orienting in our environment. We "look" for the street pattern as we arrive in a city. If it is radial, instead of the familiar grid, it takes us much longer to "get our bearings".

WE ARE OUR OWN YARDSTICK. We function on a relative basis with ourselves as our own reference point. We constantly compare new experiences to past experiences, new objects to past perceived objects. We look for the fit that feels "just right".

WE ARE A MOVING REFERENCE POINT. Even when we assume we are at rest our eyes continuously survey objects through our peripheral vision. We see with the "eyes in the back of our head". Our heart continues to beat. We are always in motion as we perceive the environment.

OUR RELIANCE ON A PARTICULAR HIERARCHY OF THE SENSE RECEPTORS IS CULTURALLY DERIVED AND BECOMES HABITUAL. Twentieth century highly differentiated cultures have a far greater dependence on the eye, than older or less complex cultures. Speed creates this dependence on the eye and atrophies the use of the close receptors which give us smell, touch and taste. We could hear, smell and touch the environment from a trotting buggy. The experience is entirely different from our speeding car.

WE PERCEIVE BY SIMILARITY AND/OR BY CONTRAST. Rhythm, the repetition of similar units within a pattern, allows us to easily understand many parts by inference from one part which we clearly understand already, without attending every one in detail. A dissimilar unit of a pattern "stand out" by contrast forcing us to notice it. In a building facade with repeating identical windows, the door is

emphasized by a contrast in size and placement so that it is easily found.

WE PERCEIVE ALL OBJECTS WITHIN A CONTEXT, FIELD OR WHOLE. Personal satisfaction derived from our perception of a whole, is particularly dependent on the relationship of its parts one to another. If the parts do not act together to create an integrated whole, we are left with an uneasy feeling. A plastic vibrator-recliner chair with all its movable parts "jars" as in the context of a French Provincial living room.

How many of us can "see" the neighborhood in the context of the city? The problem is not only one of design. The neighborhood and city as a whole are interdependent. Ultimately the vitality of one depends on the vitality of the other. Because we are trained to look only at the objects, not the context, we just don't see evidences of gradual deterioration until they have become full scale blight. The failure to see a building within the context of its neighborhood and the neighborhood within the contest of the city puts a tremendous strain on the economic and social health of the city as a whole.

WE TEND TO LOSE OUR PERCEPTION OF A WHOLE AS WE TRY SIMULTANEOUSLY TO MANIPULATE THE LARGE NUMBER OF OBJECTS AND PROCESSES OF WHICH IT IS COMPRISED. This makes it extremely difficult to intelligently guide the growth or change of the complex system, our total environment. The urban designer attempts to develop physical order out of the many physical and social systems that make up a city. The ecologist must manipulate innumerable variables as he works in the framework of the "whole" biosphere.

OUR REACTION TO DESIGN IS OFTEN INFLUENCED BY OUR UNCONSCIOUS ASSOCIATIONS. The color khaki can be permanently anathma to a GI. We take an instant dislike to a tea cup solely because its decoration triggers associations of having to clean our plates down to the flowers at Grandmother's house years ago. A connoisseur of tea cups, however, sees beyond his personal associations to appreciate the form, texture, quality of glaze, color, method of manufacture, economy of line and decoration. The ability to perceive wholes and to differentiate numbers of components within them indicates the level of sophistication of the viewer.

WE TEND SIMULTANEOUSLY TO SYNTHESIZE AND ANALYZE ANY EXPERIENCE. We walk into a strange room and perceive a total impression of the room. Simultaneously, we analyze its components - the fabric on the chair, the ceiling height, the pattern of windows light, floors. Again, simultaneously, we may visualize a particular component of the room in our own remembered environment because of a strong response to it - "Wouldn't that table be nice to have next to my bed."

WE USE SELECTIVE INATTENTION AS A PROTECTIVE DEVICE TO HELP OURSELVES ADAPT TO DISCORDANCE AND TOO MUCH INFORMATION IN OUR ENVIRONMENT. Our receptors receive great quantities of information which our perceptive processes do not allow to come to consciousness. We do not "see" the clutter of strip development. If we live beside a freeway we do not "hear" the traffic which gives a houseguest a sleepless night.

WE ARE PART OF OUR ENVIRONMENT. We are as one with our environment and environment is as one with us. We consume oxygen from the atmosphere and exhale carbon dioxide to it. Even when our bodies are dead, they continue in an exchange with the environment.

WE ARE THE PRODUCTS OF AN ENVIRONMENT THAT IS UNIQUE AND DIFFERENT FOR EACH OF US. As individual entities our perception differs from that of others. Our experiences in the environment are unique to each of us. A child looks at snow and sees a hill to sled down; his father perceives only a driveway to be cleaned.

What we eat, the climate in which we live, the work we do and the conditions in which we do it, the people with whom we do it, all help effect how we perceive and act in our environment. "We shape our buildings and then they shape us."

ORIENTATION IS THE ABILITY TO PERCEIVE ONESELF IN RELATION TO THE PATTERNS OF ENVIRONMENT. Orientation is one aspect of our need for order. Physical orientation relates the self to the dimensions of time and space. The environment can hinder or facilitate orientation. A forest or a sub-division usually give us little help because of the sameness of the trees or the houses. On the other hand, a clock tower signals our distance from a fixed place visually and aurally. The clock orients us in time by a commonly adopted pattern: four bongs for four o'clock; five bongs for five. The tower by its age, adds an historical orientation.

OUR ABILITY TO MAKE INDEPENDENT DECISIONS DIFFERENTIATES US FROM OTHER NATURAL SPECIES AND PROCESSES. We can predict the probable consequences of our action (science) and make a judgment about the effect of our act (ethics and morality). The felling of a tree represents a decision a beaver doesn't have to make.

AS INDIVIDUALS WE REQUIRE AN AREA OF PERSONAL SPACE AROUND US WHEREVER WE ARE. Our personal space surrounds us as we move; it expands or contracts according to our needs at that time and the social context. We step away from an enemy; we embrace a close friend.

If facilities do not provide enough space to support our psychological needs in a particular social context, we become stressed. We "can't sit still".

The individuals of different cultures have different personal space needs. Italians come very close, gesturing in each other's face in either love or anger.

The space bubble grows with age; without strong images of self, the very young have yet to develop a space bubble.

TERRITORIAL SPACE, AS DISTINGUISHED FROM PERSONAL SPACE, IMPLIES A RELATIONSHIP TO A PARTICULAR PHYSICAL AREA. The area may be viewed as the individual's or as shared territory, often both, over a period of time. "Who's parked his car in my place?" This relationship ties us emotionally to the physical place we value.

DESIGN IS AN ORDERED RELATIONSHIP OF COMPONENTS. It is a way we organize sensory data into meaningful wholes. When we line a road evenly with trees, we make a functional and esthetic design. We also create a design when we paint the same components to hang on our wall.

A design will be deeply satisfying only if the beholder can respond from the perspective of his own culture to the direct qualities of the form of the design. The tea ceremony in a meticulously designed room is ultimately satisfying to the Japanese who has trained his body and mind to the discipline of following a rigidly prescribed pattern. To a Westerner, it can be a bone-aching, incomprehensible ceremony which he can appreciate only because to him it is exotic.

THE PROCESS OF ESTABLISHING ORDER REDUCES STRESS. The attainment of too high a degree of order, however, eventually leads to boredom and a demand for new stimuli - with resulting disorder.

Because the process is dynamic, a sense of balance is only momentarily achieved. Styles swing from Victorian clutter to stark modern and back.

QUALITY IS IN THE EYE OF THE BEHOLDER. Quality is a value judgement. It is based on the criteria by which an individual or group makes a comparative measurement of the characteristics of an entity. Quality is relative. For a particular individual it varies in time with his changing perspective. Patterns chosen as a bride may come to have only sentimental value as one becomes exposed to a broader range of possibilities.

The individual's assumptions of quality exist in a social context at a given moment in time, that is, they exist as an implicit standard defined by a particular culture or subculture. They will vary with the degree of differentiation of the culture as well as over time. The Museum of Modern Art annually affixed "Good Design" labels to new products to signify its judgement of high quality.

This course defines the level of environmental quality as the degree to which the environmental components are integrally related to the whole. A continuous network of bicycle paths is of high quality than a system which requires crossing heavy traffic.

AGENT, MEDIUM AND PROCESS ARE ALWAYS PART OF A PRODUCT WHETHER OR NOT EACH IS EXPLICIT. We are most aware of them when we ourselves make a handcraft product such as a clay pot. The agent, medium and process are not so apparent if the "product" is a built environment such as a shopping center. Careful integration of all these variables leads to a product which functions successfully - whether to adorn a mantlepiece or to make shopping a pleasant experience.

In the making of an environment, the product is explicit but the agents, media and process may not be at all apparent to the user. If they are, experiencing the product is so much richer an experience. In part, the fascination of viewing the artifacts of past cultures, such as the pyramids, is trying to figure out how they came into being. How was the stone quarried, moved and set in place? Similarly, we are intrigued with present building. Who does not want to peep through the batterboards of a building site and vicariously help make an environment?

Agent, medium, process and product each has importance to the user. When each is considered, there is greater likelihood that the man-made product can be experienced as an integrated whole, that it will work within the context of its environment, and that it will continue to function well over an extended period of time.

SYMBOLS ARE SHORT CUTS TO ESSENTIAL INFORMATION. Symbols carry information and associated meanings. We are all conscious of clothes as symbols - the "grey flannel suit" or "long hair and patched jeans" clearly connote in our minds the men within the clothes.

We are less conscious that the environment also carries symbolic messages. It can have obvious messages such as high walls with locked gates which strongly imply "keep out". It can also convey more subtle messages such as a fountain which "invites" you to refresh yourself.

It is because the environment is symbolic to man that design can be used as a medium for sending messages. A restaurant achieves high customer turnover with uncomfortable seats. Comfortable, padded seating invites you to linger.

NATURE IS A SOURCE FOR DESIGN. It is an inspiration for the design of both small-scaled objects such as parking meters or vases and large scale environments from buildings to cities. It is also the context in which we view these man-made forms. Cities such as San Francisco may be satisfying because of the integration of the man-made with natural surroundings.

The idea that man can control nature is an illusion. Nature is consistently on-going while man's efforts are finite. Man can cut down redwoods to farm, but he cannot stop nature from inexorably, over the years, washing his top soil into the ocean.

Nature challenges us to enhance or maintain natural processes rather than interfere with them. Nature has a high degree of order, but it has an infinite number of variables. Nature also undergoes constant hourly, daily and seasonal change throughout time. It is difficult to predict the impact of our man-made building, but we should use all the tools at our disposal to try.

Our reward is to live in harmony with nature which provides the infinitely varied sensory stimulus that is so satisfying to man.

THE ABILITY TO FANTICIZE IS A NECESSARY PART OF HUMAN EXPERIENCE AND IS ENHANCED OR INHIBITED BY ENVIRONMENT AROUND US. The emphasis in architecture for the past fifty years has been on new kinds of structure, building processes and materials. Thus we have neglected to express fantasy. We have come to depend more directly on nature for visual stimulation with see-through walls

of glass and indoor gardens. This expresses one kind of fantasy.

Prior to the industrial revolution in architecture man tended to incorporate many natural and geometric symbols in his built environments. This kind of rich fantasy is missing from our contemporary buildings. The acanthus leaves on columns, the animals on cave ceilings, the natural scenes in mosaics and frescos, the abstract tile patterns and carpet patterns of the middle east, the trompe l'oeil geometric patterns of the baroque, all aided our ability to maintain interest in built environments and to be refreshed by them on reencounter. The elaboration of structure in the rich line work of Romanesque brick work, Gothic or Greek stone work, baroque wall pattern in cornices, dados or door moldings also gave the eye help in its search for stimulation.

CONSTANCY IS CHANGE. We are in a dynamic interaction with our always changing environment. The weather changes from wet to dry; buildings are torn down and new ones built. We continuously seek to perceive the size, form and changes occurring in the structure of our physical and social environment. We do this in order to maintain a sense of balance. Extreme rates of change whether fast or slow, block our ability to perceive and thus make us uncomfortable.

1. SPACIAL HISTORY
Understanding that environment effects the individual

Recall of places from the participants' past and present experience to demonstrate the impact of spaces upon the activities which occur within them.

Authors' Point of View

Specific places where significant acts have occurred can have special meaning for an individual. There are times when the particular place in which something important happens interacts to reinforce the experience. The interaction between a person and a particular place produces a lasting impact. Thus, when he later is in similar places, a person's reaction to a space depends in part on the reactions he has had in the past.

Conscious awareness of the effect on an individual of special places enables him to begin to understand the effect of all places on him.

Materials

classroom furniture (movable)
pillows
throw rugs
an intimate meeting space

Learning Experience

A. Favorite spaces

Ask the group to work out an arrangement most conducive for discussion and sharing of personal experiences. Help them as little as possible, perhaps by leaving the room for ten minutes while the group works out their solution. Ask them why they think the arrangement selected is the best.

Ask the group to close their eyes and picture in their minds the responses to the following questions. Give the participants time between each question to reflect.

"Think about the most pleasant place you frequent. Think about the shape of that place, its colors, its textures, the lighting and its effect, the odors, the temperatures, how the space is divided up or defined,

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how you move through it and what happens to you while you go through it. What kinds of things happen there? Does the place facilitate these happenings or distract from them?"

"Think about the place that meant the most to you when you were 45." (Ask the same set of questions about that place.)

Repeat, selecting ages appropriate to the group, e.g. 19, 13, 6-8.

Ask each participant to select his favorite of those places he has recalled. Have him describe it to the group and discuss what it has meant to him. "Which of the many qualities of that place made it special and why?"

"Are there any places where you go today which have some of those same qualities? How do you feel about those places? How often do you try to 'recreate' that special feeling in a space today? Other than the nostalgia involved, are those 'today' places really special in their own right? What are their positive and negative qualities?"

B. Spaces built as a child

Ask the participants to sketch on the blackboard personal spaces they built as children (forts, tree houses, caves...).

Point out that although it is difficult to represent space in two dimensions, it is even more difficult to communicate the qualities of light, texture, odor, etc. which helped make it special.

Ask each participant to explain his drawing to the class.

"What, as a child, were you trying to create?" (a refuge, a clubhouse...)

"Did you succeed? Why or why not?"

"At what point do you stop calling a place natural' and start calling it 'man-made'? A forest? A planted forest? What about a forest with campsites? What about a tree house--is it natural or man-made?"

Experience

Ours:

The participants have great difficulty making decisions as a group to change the room.

The way you rejoin the group after the class rearranges the room sets the tone for the whole course. If a "teacher's place" had been arranged, we moved into the circle as one of the group. If the room was still stiff and uncomfortable we probed comment from the participants which resulted in moving, perhaps to the floor, in more relaxed positions.

Objectives Check List

Did the participant join in with the group to rearrange the classroom?

Was the individual able to recognize to some extent the importance to any human activity of the place in which it is experienced?

Was the individual able to articulate his feelings in response to a particular place or physical environment?

Further Exploration

"Identify your personal space at work or at school."

Explore "What is the Environment" with a polaroid camera. Discuss the participants' photographic definition of the environment in class. To use this exercise as a pre-test, compare each photographic presentation with the participant's results from similar assignments in Teaching Strategies 13 and 26.

Resources

Capote, Truman, Other Voices, Other Rooms, A Signet Book, New American Library, New York, 1960. Description of personal spaces.

Proust, Marcel, "Overture" to Swann's Way, In Remembrance of Things Past, Vol. I, Random House, Incl, New York, 1934. Description of sensuous memories.

Twain, Mark, pseud., The Adventures of Tom Sawyer. The use of personal spaces by children.

Wolfe, Thomas, Look Homeward, Angel, Chapter 1. Description of train ride home.

2

Creating A Personal Space

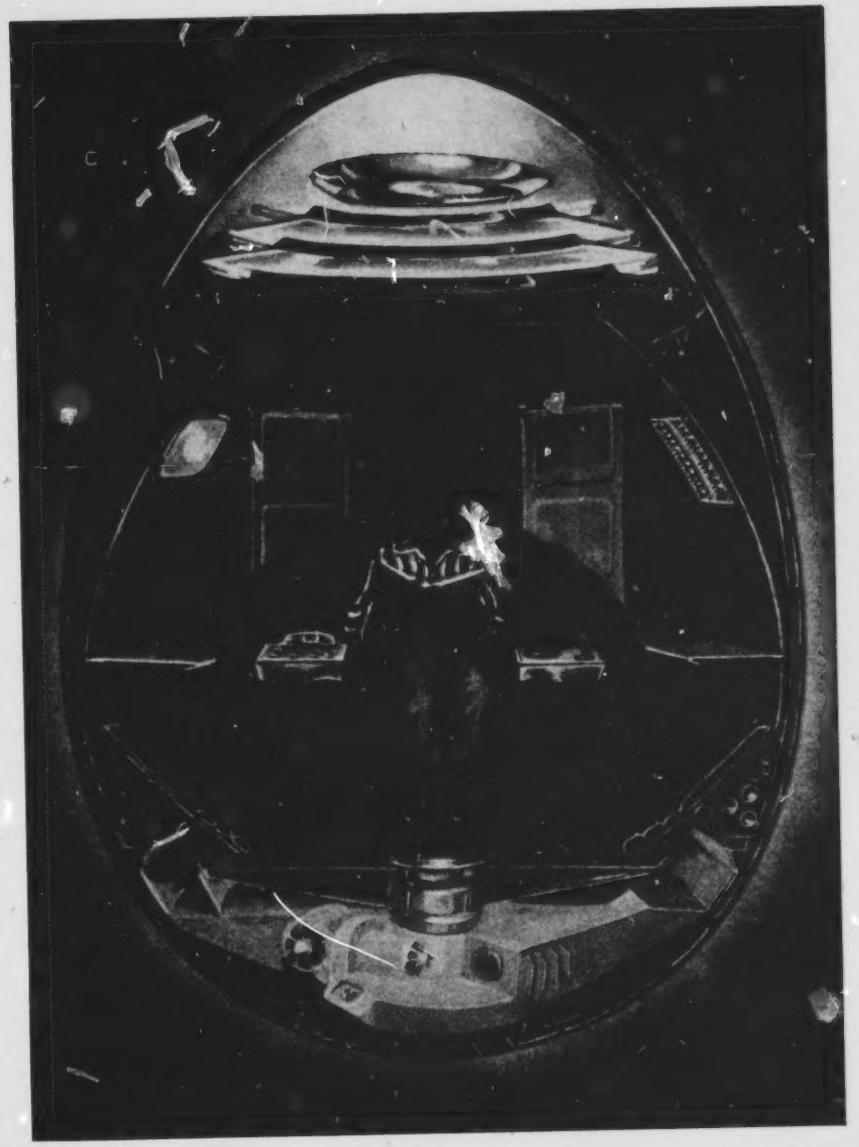
Becoming aware of ability to effect environment

The individual builds spaces in cardboard to evoke a particular response; thus he begins to judge and value all spaces.

"Give the Impossible Dream: PRIVACY

This most sought-after and elusive of all commodities becomes a reality with a private world – designed to your needs and specifications – a contemplative environment totally your own. Once built, in the area of your choice, the only entry to your world is effected by the insertion of a special Sterling card into the entry slot. The card is notched only for you to be carried on key or neck-chain. Within your world, you relax in an atmosphere psychologically fitted to help you accomplish peak mental and personal potential. Individual needs are determined after your in-depth interview with the designers of Associated Space Design, Inc. of Atlanta. Each person's 'World' is as unique as he or she. Colors, equipment, accessories – all are as variable as a person. Basically, whatever else goes into your world, the dimensions are 12' x 15', with sliding panels to permit a one-way view of either the actual outside world, or superimposed film of your choice of location. There will be a lounge – your choice of chair, couch, recliner, waterbed, or cushions. Close at hand will be whatever materials you need to begin work, once your problems have become unknotted. Completely sound-proof from exterior noises, your World can be filled with sound – whether musical or of nature – that best unravels the paths of your mind. Price of your World must of necessity be a variable, but begins at 80,000."

Neiman-Marcus speciality store Christmas catalog, 1973.



AUTHORS' POINT OF VIEW

Man and space interact, each continuously influencing the other through time. As Churchill expressed it: "We shape our buildings; thereafter they shape us." We shape or define space by enclosing or demarking it in some way. It then effects us. However, until we have defined space, we cannot perceive it – even then we may not "see" the space, but only its edge or objects in and around it. Spaces may impart many qualities to influence man's feelings and actions: for example, intimacy, grandness, vastness, and claustrophobia can be suggested by space. One of the most important qualities space can impart is a sense of security. The need for security is

part of all men. Man reveals his psychological need for it by the way he positions himself in space: He sits in frontier saloon style with his back to the wall, the position of maximum security. In sleep, man's most defenseless state, he lies with his head to the wall. The need is emotional as well as functional.

Each man's first secure space is the womb. Early man's cave was also a place of security, that is, shelter from the elements, from animals and other men. Part of this aspect of security is the feeling of privacy, of being hidden. The sense of security is heightened if "you" can see "them", but "they" cannot see "you". We all remember the intimate, small spaces we were attracted to in childhood.

a) The idea of creating space is a process of enclosing the out of doors.

b) A street can have the qualities of an enclosed space.

c) Elaborate chandeliers and massive furniture make this space an integrated whole.

d) Although an automobile may in fact place us in danger, it has been designed to give us quite the opposite illusion. The internal space gives us a small-scaled enclosure with a feeling of partial privacy, a sense of isolation in a comfortable sealed bubble and a relative sense of control of space. These combine to give a sense of security even as our vehicle hurtles through space.

a

b

c

d

Man's impetus to manipulate space is based on more than his seeking security. He has a recurring need for sensory stimulation on the one hand, and for perceiving order of these stimuli on the other, so that he is thrown neither into monotony nor into chaos. The small, dark spaces which interested us repeatedly as children, would quickly bore us as adults. After we had (subconsciously) taken stock through our close sense receptors – smelled, touched, listened – we would be ready for more stimulus to prevent monotony.

In the design of environment a variety of sensory elements such as form, texture, color, light, sounds and air motion are necessary to satisfy the human need for sensory stimulation. Space is defined and ordered by choosing, combining, and manipulating these various environmental elements. Some of these elements will trigger strong associative qualities in the individual if he has had past encounters with them.

Man builds to enclose space creating an "inside" which separates him off from the "outside". This enclosed space is three dimensional. It has shape established by the walls, ceiling and floor which defines a volume. Added components such as color, furniture and other introduced objects further define a space. They may, if considered in their relationships one to another, act together to create an integrated whole. Often they do not.

d

e

f

d) Two houses use different associations to send the same message of grandeur, position and wealth. One imitates the white house; the other, a royal castle.

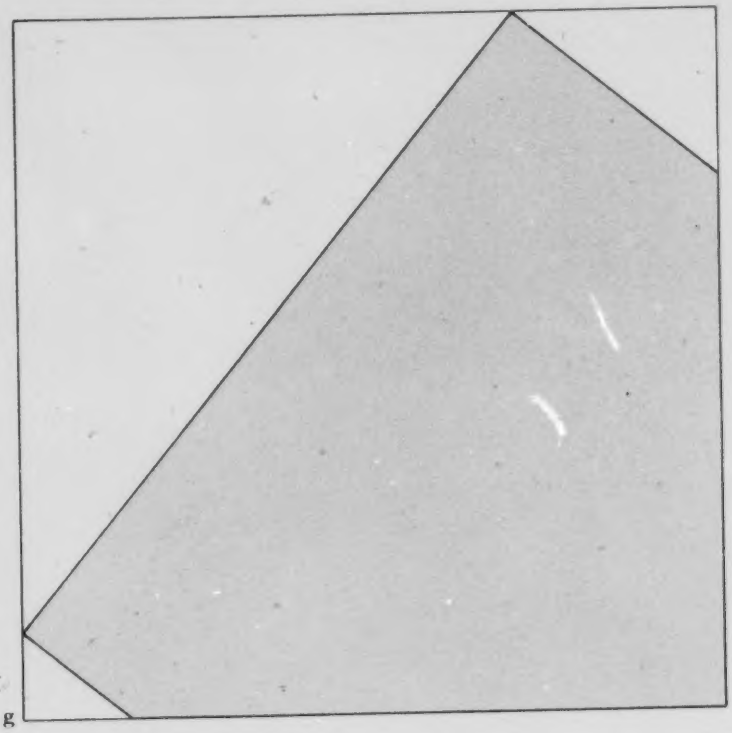
e) A street tunnel space designed for a grand entrance to a country chateau.

f) In late afternoon cars are banned from this street while the Perugians come out to see and be seen in their city living room.

People in motion are also components which further define a space, and thereby introduce the fourth dimension, time. Their numbers, clusters, directions of movement, and the noise they generate constantly alter the space.

As space changes over time it will acquire an additional physical quality, a patina of use. A patina of symbolic associations will also build up, based on good or bad experiences in the space. The assasination of President Kennedy continues to effect the user's perception of Dealey Plaza in Dallas.

A street also can be perceived as a volume or exterior room. The sides are rows of buildings, or trees. Streets can be more than two dimensional



g

g) Defining space:

What is this space shown in only two dimensions – a cube, a pyramid, a building site...?

corridors for cars: they can be consciously designed for a total effect. The same elements such as color, texture and patterning pertain to a well planned street space as they do to an interior room. The activities that take place in the street – children playing, trucks thundering, trees blossoming or shedding leaves – are as much a part of the whole as the man-made buildings and light posts.

A man-made environment may carry a non-verbal message, for example, "be welcome", "stay out of here", "be humble here" or "here be afraid". The message is two-fold – it *may* be a conscious message from the maker to the beholder. It is *always* an unconscious message about the maker – his capabilities and what he values. All of the visual elements used must be chosen to effect the particular message desired. A message of "security" for example, is more than a heavy bolt on the door. It may involve the thickness of doors and walls, the firmness of the floor, the sense of structural solidity of walls and roof, the size of openings into the space, the degree of privacy, and many more elements.

Manipulating space is a satisfying activity of man. It is a difficult challenge to do well. How we do it – either as individuals working for ourselves or as members of a group working for society – effects us all.

OUR EXPERIENCE

We found that this learning experience is a natural place for the participants to see that their personal taste is not necessarily a solution to a posed problem. Their personal preferences are valuable ipso facto; they are theirs. However, because they are so highly personal they therefore do not communicate with other people necessarily.

Working individually with each participant two or three times in the course of this exercise helped him realize his idea for enclosure. Some need help in simplifying a too elaborate construction, others in pushing their ideas further. "What do you need to do now to make your space feel more _____?" Don't be afraid to change, experiment or start over." "It's a big problem – you've a right to feel frustrated."

The personal space constructions can be saved and used as vehicles for Teaching Strategies Six, "Three-Dimensional Order" and Seven, "Light."

This learning experience is valuable for insights on how to use space efficiently. Working out the inherent logistics problem is of equal value. Spaces may be so constructed with duct tape that each may be undone at one or two junctures, folded and stacked in a corner between uses.

Participants who finish early can do Learning Experience G of Teaching Strategy 15 (introducing them to the concept of 'negative space') in pairs or small groups.

Cardboard is easily cut and folded in several different ways which increase its structural properties. Curved creases (a), bent edges (b), and folded surfaces (c) all result in stronger construction than the simple flat sheet.

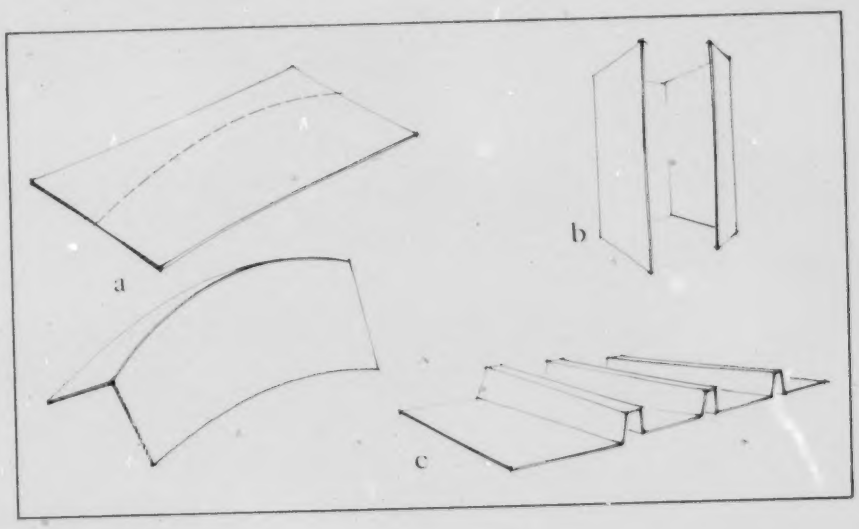
LEARNING EXPERIENCE

A. Manipulating space

Begin the class with a brief discussion of 1) how space effects man and 2) how man can manipulate space to achieve desired qualities. Referring back to the spacial histories and to the Authors' Point of View, help the participants define what constitutes a small personal space. "What are the physical characteristics of a personal space that make it so satisfying? When you subtract the colors, the odors, the texture, what are the qualities of the *space* itself?"

"Each space has an entrance, an exit and exists in a context. How does the way you move into and through the space effect your mood? How does the positioning of the space in its context effect the impact within the space? For example, when you look out of the space, what do you see? Does the light from the windows enhance the mood of the space or counteract it?"

"In what ways could you manipulate only cardboard to 'shape spaces' in order to define a volume with a particular impact? For example, what feeling does a person have occupying a round volume or space with a very high ceiling? with a very low ceiling? with a skylight? with light coming only from slits in the walls? with conical roof? with a turret? In what ways does each alteration change the effect the space has on a person within it?"



B. Creating a personal space

Each participant is to build a three-dimensional structure large enough to contain himself using cardboard and duct tape.

"Man-made environments need to be related to the individuals using them. A space which we can make personal satisfies a psychological need in all of us for active identification with our environment. In this project, each of you must decide what particular qualities you desire in your personal space. Try thinking of space not as a void but as a solid form in order to understand that it has characteristics which are independent of its enclosing boundaries."

Demonstrate various techniques of manipulating cardboard – taping, stapling, folding, and making simple cut joints. (*Complete Cardboard Carpentry Tool Kit* has some useful techniques.)

When the projects are finished invite the class to exchange personal spaces, leaving in each a card bearing the adjective best expressing the emotions evoked as perceived by the visitor.

After the participants have had the opportunity to compare their visitors' responses with their own intended effect, help them in a discussion to evaluate to what degree they were successful in communicating their ideas. Now ask the participants to extrapolate and discuss larger scale environments in the same terms. "Identify rooms, buildings and open spaces you have experienced which successfully evoked a sense of personal space."

Visit rooms and spaces immediately available. Analyze the "messages" these places communicate."Are the messages appropriate to the function of these places?"

LEADING QUESTIONS

"Did you successfully evoke for others the emotional response you intended? For example, did your visitors have the same idea of comfort as you did?"

"Did you create the effect you set out to create? How well does it work?"

"How did the materials you worked with effect what you could do? If you were to rebuild it, would you do anything 'different'ly?"

"What aspects of design did you encounter?" (Shape, volume, light, heat...)

"Did the odor of the cardboard or tape affect your response?"

"How did the working space effect what you could do?"

"How would this have been different if you had been working in a room by yourself?" (So many "favorite" spaces are places of solitude.)

"What is the difference between the outside and the inside of your structure? Did anyone create a piece of sculpture (form perceived only from the outside) rather than a space?"

C. Creating a space which evokes a specific quality (alternative to B.)

Ask the participants to build a cardboard space as above, but instead of creating a personal space, ask them to evoke an exaggerated response such as "discomfort," "claustrophobia," "extreme serenity," etc. "How could you make someone feel_____?" Continue the project and discussion as in B.

D. Village

Ask the group to create a "village" with their spaces, *paying special attention to the whole composition.* Stress the positioning of each structure so as to best enhance its qualities as well as the relationship between structures. Emphasize that they should not be satisfied until they find a solution they can justify in subsequent discussion. Also pay particular attention to the space defined by the exteriors of the personal spaces – its shape, how well it functions for the uses to which it will be put, etc.

MATERIALS:

double-faced corrugated cardboard – at least three 60" x 80" sheets per student

duct tape (2" wide plastic-coated adhesive)

staple guns and staples

metal straight edges

matte knives

pencils

white butcher paper ("poster bond") for sketching or as a material

3" x 5" cards

The space in which this session is conducted should be large enough so that each participant has an area of at least 10' x 10' in which to work.

OBJECTIVES CHECK LIST

Was the participant able to accomplish his desired quality of personal space as evaluated a) by himself, and b) by his peers?

Has the participant used design components such as texture, light/color, pattern, movement through space and shape of space to create the desired qualities, or has he used only objects to symbolize these qualities?

Was the participant able to analyze ways in which physical components interact to form environments with specific qualities?

FURTHER EXPLORATION

Extensions of this Teaching Strategy can be developed for specific groups. For example:

Architectural students can draw a plan, perspective and section of their space and photograph the space.

Engineering students can determine the structural limits of cardboard as a material. "How could your structure be made to carry more weight? Which parts are in tension, in compression, subject to shear or moment forces?"

Psychology students can compare the behavior of children and adults in the personal spaces.

Teachers can explore uses of cardboard in their classrooms.

RESOURCES

Farallones Scrapbook, Farallones Designs, Star Route, Point Reyes Station, California 94956, 1971. Distributed by Random House. Suggests constructions from many materials, including explanations for bending, taping, slotting, and lacing cardboard.

HARTUNG, ROLF, *Creating with Corrugated Paper*, Reinhold 1966. Ideas for textured sculpture and objects which can be made with cardboard.

SOMMER, ROBERT, *Personal Space*, Prentice-Hall, Englewood Cliff, N.J., 1969. The behavorial basis of design.

SUMMERSON, JOHN, *Heavenly Mansions*, The Cresset Press, Ltd., 11 Fitzroy Square, London W1, England, 1949. Chapter I delineates historically the use of small, human-scaled spaces in architecture.

The Workshop for Learning Things, 55 Chapel Street, Newton, Massachusetts, 02160. Offers several publications on cardboard carpentry.

3. SENSORY PERCEPTION
Receiving and interpreting information

Excercises to stimulate understanding of sensory reception and perception culminate in activities to discern the impact of the environment on the senses.

Authors' Point of View

All information comes to us through our senses. There is no other way to receive it. Our sensory receptors receive stimuli from the environment and send impulses to the brain. The needle pricks our finger; we feel pain.

The tactile, olfactory and gustatory receptors register relatively near stimuli. The visual and auditory receptors can, in addition, register distant stimuli. Two internal stimuli are usually taken completely for granted until for some reason they are subjected to unusual forces or are lost. The proprioceptors are located inside the body in tissues and respond to stimuli originating within the body such as a headache. The kinesthetic receptor accounts for the sensation of movement or strain in the muscles.

Perception is the interpretation of sensory impulses through past experience. The unseen prick registered by us as a shot in the arm could be assumed by a primitive tribesman as having come from a poisoned dart.

In a technological culture visual perception is commonly used to interpret phenomenon which have previously been confirmed directly by the other senses. The bread "looks" hard. The candy "looks" sweet. The mountain "looks" far away.

Perception orients us in time and space. We hear the carillon and know that it is noon and we are near the center city. This is our conclusion based on past experience.

Materials

Locate a long corridor or space to be used in analysis of perception at various distances.

Locate spaces which invite movement such as jumping, e.g. an inclined plane, wide stairs or stair landings.

A pencil and pad of paper for each participant

An object with unexpected properties (e.g. a plastic salt shaker, that looks like metal or wood, filled with sugar)

Blindfolds (one for every two participants)

Learning Experience

A. Distant and close receptors

1. Discussion of senses and perception

Perception is very complex. We are concerned with becoming more aware of our use of the senses. "What are these senses through which we receive all information? Which are used at relatively close distances? Which can be used when both long and short distances are involved?"

In addition to perception through our five senses, we perceive or get information through the interpretation of one sense by another. We see (visual sense) a fur coat and know it "feels" (tactile) soft, without having to actually touch it. By using our past experience we have made a visual interpretation of a tactile sensation. "Give examples of visual interpretation of the other senses."

Every item is perceived in a context. Each "object" exists in its field. In fact, its context is one of the major tools we use for deciding what we have perceived. "What are some examples of situations in which the "object" remains the same, but its field is different and thus the whole, including the object, is perceived differently?"

2. Description of partner

Divide the participants into pairs stationed at a 200-300 foot distance from one another. Ask each to record on his pad everything he can perceive about the other.

"Walk 100 feet towards each other. Repeat description of perception."

"Walk to within 10 feet, repeat description."

"Walk to immediate physical proximity. Close your eyes and

leave them closed. First one partner, then the other, describe your perceptions concentrating as totally as possible on just your auditory sense. Repeat using the olfactory, then the tactile sense. Open your eyes. You should be close enough to your partner so that he is visually out of focus. Describe what you perceive visually. Now separate about one foot and note any perceptual differences."

As the instructor, repeat the preceding activity with a participant. Identify all the elements you can perceive, including the environment around the individual: shadows, poor perception of form, scale, color. "Notice I'm describing the object and also the field in which it exists."

As you move closer (100 feet), describe your perception of your partner's movement: his gait, movement of arms, legs and the sounds of movement.

Point out to the class that at a distance of 10 feet, perception of form, color, scale and texture seems to change considerably. Sound has become more noticable. Also note for the class that visual perception of movement may cause one to "hear" skirts swishing. Visual perception of a "shiny" skirt may suggest that its material is silk.

At zero distance, comment on your use of : auditory perception (sounds of breathing, cloth movement, watches, etc.); olfactory (perfume, body odor, materials smells, tobacco); tactile (texture of clothes, skin, firmness of material, muscle); gustatory (tobacco taste); proprioceptive (body balance, feeling of internal discomfort) and kinesthetic (forward movement, hesitant motion).

Recap for the class examples of the difference between direct perception of texture, sound and movement and visual interpretation of each.

3. Description of object

Ask each participant to record as a list his description of a common object with unexpected properties. In discussion with the class, itemize on the blackboard each descriptive word under the sensory receptor used to obtain it such as "visual: shiny, transparent". Associative words such as "plastic" should be put in a column separate from words such as "smooth", "hard" which are the result of direct sensory observation.

"Which column contains the most adjectives? Why? Which contains the least? Why? What does this imply as to the relative importance of our different sense receptors? Look at a texture and then touch it. Is it different from what you expected?"

B. Kinesthetic and proprioceptive receptors

1. Statues

"Remember the game you played as a child called 'Statues' in which someone would take you by the arm and throw you into an out-of-balance position which you would have to hold? You may either do this to a partner or assume an unbalanced position.

What sensations do you feel? In which direction do you feel you will fall? Upon which joints is there stress? What is the feeling at your elbows, shoulders, hips, knees, ankles? Where do you wish to move next from this position?"

2. Movement in space

Encourage the class to experiment with movement in space: Standing at one end of the long corridor: "What action does this corridor suggest? If you were a child, what would you want to do there?" (walk fast, run, skip?) "What senses are you using when you run?" Viewing a wide staircase: "What movements does the staircase suggest to you? Would you want to run, to sit on it, take two steps at a time? As a child, what would you want to do?"

"In moving up or down the stairs, where is your sense of balance? What muscles sustain the major strain going up? Going down?" (Instructor teeters on stair.) "What did you feel in your own musculature when you saw me off balance? This would be a visual interpretation of a proprioceptive perception."

C. Blind walk

Ask participants to remove their shoes and socks and divide into pairs. Ask one partner to act as the "seeing eye" who must both challenge and protect his blindfolded companion as he leads him on a walk. The chosen route should provide a wide variety of sensory stimulation (e.g. movement: elevator, stairs, ramps; texture: grass, concrete, tile; sound: birds, cars, voices.)

The partners should trade roles halfway through the allotted time. At the end of the activity, lead a discussion of the sensory discoveries. Focus the participants' attention on the dominant role of the eye over the other senses.

Our Experience

We found necessary constant reminders of the differences between reception, perception and visual interpretation.

It is best to do these exercises primarily indoors because of the distracting number of stimuli outdoors.

Objectives Check List

Did each participant become aware of the use of sensory perception in orienting himself in the environment?

Did each participant recognize his use of vision as an interpretor of the other senses?

Were the participants able to distinguish their own associational responses (perception) from their sensory reception?

Did the participants verbally articulate their responses to sensory stimuli?

Further Exploration

Suggest that the class individually or as a group:

Play an associations game
"If this sound were a smell, it would be like_____."
"If this taste were visual, it would look like_____."
"What smells do you remember as a child?"

Examine the world through magnifying glasses, tubes, colored lenses.

Create an array of textures for a blind person to enjoy.

"Read the first resource and then think of other examples in science which illustrate the necessity of distinguishing between perception and sensory reception."

Resources

Elias, Hans, "Three-dimensional Structure Identified from Single Sections", Science 174, 993-1000, 1971. (Misinterpretation of flat images such as those visually observed in electron micrographs can lead to errors in judgement of their form.)

Fuller, R. Buckminster
(Description of sensory experiments.)

Proust, Marcel, Op. Cit. Teaching Strategy]

St. Exupery, Antione de, Wind, Sand and Stars, Harcourt Brace N. Y. 1949. (Sensory descriptions.)

Zubek, John, Sensory Deprivation. Century Crofts, Meredith Corp. The Century Psychological Series, 1969.

4. PROCESS
Valuing the process of creating

The participant as agent-designer explores the characteristics of media--clay and bread--to learn to value the process of creating as well as the product.

Authors' Point of View

The medium influences the product. All media have particular limitations and assets. "Medium" is the material from which a "product" is made and is itself a means for communicating a message. "Messages" can be conveyed in many media. Words, images, body movements and materials are all "media" from which products are made. Each of these media can carry a message, for example, a plant formed in plastic conveys a different message from the natural plant.

"Process" influences the product and also communicates a message. "Process" is a series of actions--shaping, forming--which lead toward a product. The process of doing can be a very desirable end in itself, for example, the sensory stimulation that comes with kneading dough, sculpting clay, or filming a movie, is pleasurable.

An "agent" translates a medium by process into an object. Medium and process effect the message the product conveys. A successful product requires the agent's personal commitment to process and his understanding of the assets and limitations of the medium. All "products" contain evidence of process and of the agent's intent and competence.

Agent, process and medium inseparably contribute to the over-all impact of a city. The choice of building materials and the way they are combined and juxtaposed influences the message of the city--"charming", "sophisticated", "impersonal", "disorienting".

The continual process of tearing down and rebuilding effects great numbers of people who are keenly aware of dust, noise and disruption. This process can carry the mixed message of loss of something familiar and of the promise of the "new".

Materials

examples of objects sculpted from clay and bread dough

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Bread sculpture: home-made bread, prepared dough or 1 loaf per participant of frozen bread dough, e.g. Bridgford Frozen-Rite, flour with which to work the dough, samples of different kinds of flour and cornmeal, egg yolks and pastry brushes for glazing sculpture, poppy and sesame seeds for texture, pie pans or cookie sheets for sculpting and baking, ovens (sculpture can be satisfactorily carried from one building to another, if necessary), knives, butter, napkins, sponge and paper towells.

Clay sculpture: one or more kinds of mixed clay, sample quantities of the clay ingredients, cardboard for each participant to work on, 1 sq. ft. press board squares for finished pieces, newspaper-covered work tables, a few clay working tools, rags or paper towells and a bucket of water. (The tables must be thoroughly cleaned so that no clay gets mixed with the dough.)

Other media: materials necessary to work in other media of your choice, e.g. string, paper mache, plaster of Paris, etc.

Learning Experiences

A. Dough sculpture

The impact of this experience is enhanced if the participants do not know in advance the medium to be used.

"We have worked with one medium so far--cardboard, so let's describe and characterize it." Try to extend the previous discussions, getting the participants to project further into the significance of the interaction of agent, process and medium.

Break up the previously prepared home-made bread and pass out pieces for the class to butter and eat.

Pass out prepared dough and ask participants to "Experience this with your senses; only after you have done that, think about it. As you work with the dough, explore its characteristics as a material. What are all the different processes that are used to get dough to this stage of development: What differences do you see in these (examples on hand) various flours?"

Ask the participants to sculpt as tall an abstract form as possible. When they are apparently finished, suggest the opportunity to glaze (with egg yolk) and texture this sculpture.

While the sculpture is allowed to rise (about 30 - 60 minutes) begin working with the clay.

B. Clay

Ask the class to halp themselves to big chunks of clay. After they have played with the clay awhile, ask them to make as tall as possible an abstract form that has sensuous connotations. As they work, help them verbalize the process they are doing. When someone has completed a form and you have discussed it with him, ask him to do another, from the same clay.

Elicit from the participants as they work, comparisons between clay, dough, and cardboard as media.

C. Discussion comparison

To help enable the participant to analyze objects made by 1) different processes, 2) different agents (designers) and 3) of different media:

Pass around the sculpted objects as well as their raw ingredients and play with them.

List on the blackboard components suggested by the class as being common to the objects. Analyze two or three objects each of clay and of bread dough and the cardboard spaces in terms of "process" and of the components: height, shape or form, mass, volume, space, texture, color, odor.

"Find adjectives to describe each object in terms of its components: is it round or square, blue or yellow, etc. Distinguish between direct sensory experience and visual interpretation." Ask the class to compare clay and dough with cardboard, a medium with which they are already familiar.

"Which is the most important: medium, process or agent?" (It's impossible to say.) Discuss briefly the concept that the product is inseparable from the producer; the process from the medium.

"In what ways does one's choice of medium affect the message? What are the limitations of the selected media? What advantage did one medium have over another? Why did we include bread dough? How did the process effect the end product? What would have been the differences in your personal space if it had been built of clay? wood? cloth? Is there any value in process for its own sake?"

Extend the discussion to set these learning experiences into the context of the course, first by analyzing how they apply in the classroom and then in the environment as a whole.

"What are the broader implications of the concepts? For example, the messages (products) of Frank Lloyd Wright can be distinguished from those of other architects by his unique personal vision expressed in how he used natural light, rich materials, and carefully contrasted spaces.

Can you apply these simple experiences to larger problems? What messages are we learning about ourselves in making civic environment? Name some. (For example, we care about fast movement, as evidenced by freeways.)

What other messages can you think of about what other people in past times cared about?"

When the dough has risen, let the class watch it bake. Provide butter so everyone can eat their bread when it is finished. This emphasizes that often the process, in this case of making and eating, is more important than the end product.

Alternative Learning Experience

A. String

Ask each participant to bring to class a roll of string. Using the entire volume of the classroom, create a spiderweb. In the discussion, point out the many examples provided of space definition, color, texture, pattern, order, systems and process. "What is the difference in sensory stimulation between string and clay or bread?" (odor, texture...) The end result is not object oriented, and is extremely easy to clean up!

Experiences

Ours:

Most participants need a lot of help in comprehending and verbalizing the inseparability of agent, medium, process, and product in all manifestations of the environment.

By Teaching Strategy 4, some participants show concern about why they are being asked to do these crazy things. As instructor, we found we had to remember always and repeatedly to put the experiences into larger contexts eliciting over and over from the class how they think all this will be relevant to them.

The bread dough exercise is so unexpected a class activity, that our participants tended to become somewhat defensive or frivolous. Thus we tried to set the tone of a serious learning experience before we handed out bread to eat.

If the classroom is very warm an ice chest is useful to rechill the dough.

With some groups, the intenrity of these learning experiences can be better kept by combining Teaching Strategies 4 and 6. In this case, introduce the discussion while the group is working or as they become too occupied with producing "objects". Select texture as the one component of discussion C. that they are to explore further. Ask the class to experiment with textures on the bread and/or clay. Save a variety of texture samples to use in Teaching Strategy 7.

Objectives Check List

Did the participants gain further insight into the components of order--shape or form being the one emphasized in this Teaching Strategy?

Did the participant recognize the value of process for its own sake?

Did the participant learn to analyze the effects of various media and associated processes on products?

Did the participant more clearly understand the inseparability of agent, medium, process and product in all aspects of environment?

Did the participant gain further confidence in understanding and imposing his own will to create order?

Further Exploration

Ask each participant to write a page on what, specifically, they think were the concepts behind this session. "Give two detailed examples of how these ideas apply in your city."

Suggest selecting a medium with which the class has not worked and creating a sculpture.

Explore the "process" of real experiences, e.g. of a car wash, of making a McDonald's hamburger.

These Learning Experiences provide experiential involvement in problems to give abstract concepts concrete reality. Shape, form volume, texture and so forth are examined directly in a discovery process. Various ways can be used to put the ideas into the context of specific subject matter. For example:

Science

"How does the scientific method handle 'agent' and 'process' in order to observe, define and measure properties of materials?"

Mathematics

"How could the sculpted forms be 'measured' (surface area, volume, center of gravity)?"

Social Studies

"How do art forms such as sculpture read as symbolic messages of social values at various times in history?"

English/Reading/Film

"In what ways does a writer/photographer communicate his own direct sensory experience to others?"

Resources:

Barr, Alfred H. Jr., editor, Masters of Modern Art, The Museum of Modern Art, N. Y., Distributed by Doubleday and Co., Garden City, N. Y. 1958. (Sections on photography, film, design for the theater, architecture and crafts.)

Heimsath, Clovis, Pioneer Texas Buildings - A Geometry Lesson, University of Texas, 1968.

Read, Sir Herbert, The Art of Sculpture, Pantheon Books.

Structures, Elementary Science Study of Education Development Center, Inc., 55 Chapel Street, Newton, Mass. 02160. (Pamphlet giving inspiration, materials, techniques and examples of constructions out of clay, straws and paper tubes.)

5. TWO-DIMENSIONAL ORDER
Using line, pattern and balance to order stimuli

The participants organize data in two-dimensions as an introduction to comprehending the function of all order, and to developing the ability to evaluate order in their environment.

Authors' Point of View

The individual organizes the sensory data which he receives into meaningful wholes to help him orient himself in the environment. If there is no ordering, no synthesis into a whole, the individual is left with a feeling of dissonance (a mild form of chaos).

Repetition, that is, order that has been previously identified, is a meaningful reference. It reduces anxiety about seeming chaos, so the individual knows where he stands. One of the reasons we need order is to simplify data so that it can be mentally manipulated. Another is to make data easier to remember.

Tools are used to establish order out of chaos:

Line gives definition to infinite space. It can divide, encircle, box in or shut out space, establishing field and object.

The organization of line is a basis for further definition of space with patterns and forms. Both symmetry and rhythm are kinds of patterns.

Balance denotes a set of dominant and subdominant forms in harmony with one another to form a whole. Symmetry is two elements in equal balance.

The same tools can be used to deliberately create tension to heighten interest and involvement.

If past ordering has been too rigid and tight, future material cannot be projected into it and therefore sensory perception is blocked. The reliance on "stereotypes" is an example of too rigid an organization of data.

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Materials:

for each participant:
unlined 8 1/2 x 11 paper
black broad-line pen or crayon

Collect books of line drawings by a variety of artists such as Matisse (e.g. the Vence chapel), Klee, Picasso (e.g. the Minotaur series) and Japanese sumi paintings.

Learning Experiences

A. Ordering random lines

Hand out two sheets of paper and a pen to each person.

Ask each participant to "Draw one line on your paper. There is only one condition which must be met: the ends of your line must begin at one edge of your paper and terminate on one of the other three edges."

Divide the class into groups of five or six. Ask each group to "make order" out of their papers.

(Possible solutions will include geometrical patterns, a straight line, or even the arrangement of all the papers into a stack.)

Ask each group to visit all of the other groups' arrays.

Ask each group to draw from memory (without referring to them a second time) as many of the arrays as he is able to.

The instructor, with the class, compares the drawings with the original arrays still in place on tables or the floor. "Which arrays proved easiest to remember? Why are they memorable?" (In general, the array with the highest degree of order will be the most memorable.)

Still referring to the original arrays:
"Which array do you like the best? Is it the same as the array which was the easiest to remember? Why or why not?" (Perhaps a lesser degree of order is more interesting.) "When you look at the whole, do you see an 'object' or the 'field' ?" "Which array has the most content? Does a higher information content make a more interesting array? Can the amount of information be too high?"

Completely mix up arrays. Throw down one at a time, asking the class if they can remember the number of papers and the configuration of each lin "What happens when there is no apparent order to these arrays?" (There is an order but there are so many variables we cannot perceive any order. This makes it very disorienting and difficult to remember.)

B. Defining and setting up different orders based on symmetry, rhythmn, line and pattern.

Referring wherever possible to the arrays the participants have made, have the participants help define, while the instructor writes on the board, definitions of the following terms:

line, pattern, form, symmetry, rhythm, balance

Hand out additional paper and ask the participants to draw examples of these kinds of order.

Discuss in what ways on a large scale designers of cities and of buildings must provide ordering to their work in such a way that it communicates to users relieving their anxiety, e.g., about how to reach the airport and in which direction to move once inside the terminal. (Learning Experience D, Teaching Strategy 8 involves actually experiencing these concepts in the city.)

Experience

Ours:

We emphasize ordering as it relates to the discipline of our participant group. For example, line can be defined from different points of view, i.e. math, art.

We use this teaching strategy as an opportunity to "regroup", i.e. to let the participants work through orally what they can expect to get out of this course. If they are floundering this is a time you can give structure and closure to the course. "What do you think this course has been about?" (using your senses). "How does man order things? How does he keep his sensory receptions from bombarding him to the degree he can no longer function? Can you 'order' the experiences we have had in this class? Can you extrapolate from these trivial experiences to solving larger problems? Of what value would these experiences be in training a scientist? an architect? a psychologist? a businessman?

"How do you think you learn? What is the process? Isn't a major part of the process of learning a matter of ordering information into relationships? This increases your insight or understanding and also makes it memorable and therefore retrievable. Of the things you are learning now, how much do you expect you will remember twenty years from now?"

Objectives Check List

Was the participant able to articulate why man needs order, to understand that ordering simplifies data so it can be easily perceived?

Did the class demonstrate how order is defined by the use of line, pattern, rhythm, balance, symmetry and proportion?

Did the participants use such tools as line, pattern, form, symmetry and rhythm to establish order?

Did the participants understand how the lack of ordering can effectively block further sensory reception?

Did the participant understand that people need varying degrees of order?

Further Exploration

Examine the line drawings of Matisse, Klee, Picasso and Kandinsky, and the ink sumi paintings. "Do you see objects or the field? How is line used in different ways to express moods and emotions? What is the emotional impact of each kind of line in itself? What degrees of order are used? What would be the effect of Klee's having used a higher degree of order? The effect of Matisse having used a higher degree of information content?"

Show the class a drawing of a Picasso dove. Ask them their associations with the picture. (Communism, peace...) "What do these associations have to do with your reaction to a work of art? Do they hamper you in forming a value judgement of it as art?"

"Consider how these same tools of line, symmetry, form, balance, etc. are also used to establish order in dance, music, literature, poetry, and the theater. In considering a particular work, imagine it revised with greater and lesser degrees of order and more and lesser amounts of information content. Be able to express an opinion and rationale for your opinion."

"What order do you find in nature?"

"How do we order other kinds of information? In science, mathematics, history...?"

Resources

Monographs on such artists as Picasso, Matisse, Kandinsky

Barr, Alfred H. Jr., Op. Cit. Teaching Strategy 4. Illustrations of the work of a great variety of artists from Rousseau to Lippold.

Heimsath, Clovis, Op. Cit. Teaching Strategy 4. "Ordering" as exemplified in simple, small buildings.

6. THREE-DIMENSIONAL ORDER
Texture: ordering in three dimensions on a surface
Shape: ordering of objects

Exploration of small-scaled three-dimensional order as an introduction to order in the larger environment.

Point of View

Texture is an important component in the total environment. It is perceived directly, by touch, and secondarily by visual translation of past tactile experience. Texture is used to provide enrichment for variety and the relief of tedium.

Texture is also used as an orientation tool. We expect to see textures at an accustomed scale. This applies equally to the small-scale texture of an object and to the large scale texture of an urban environment.

Selective inattention is used to insulate oneself from the unintelligible clamor of the environment.

Once the participant is consciously aware of his relationship with the environment and its components, he is able to judge and then demand those environments which enhance his living.

Materials

prepared panels of textures (exclude the use of clay)
three untextured boards, e.g. cardboard or masonite, per student
materials brought in by class with which to make texture
materials for cleaning up

Learning Experience

A. Qualities of textures

Encourage the class to view and handle a variety of textures common to both natural and man-made environments.

In smaller groups using one texture at a time, discuss the following suggested items:

Ask each participant to experience the texture visually from a distance and describe it. Ask him to use as many descriptive adjectives as possible. Record these adjectives on the board.

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Then ask the participants to experience the texture tactilely, perhaps first with their eyes closed.

If the participants are having difficulty, in order to help bring additional adjectives to mind, have them complete the following sentences:

"It makes me feel_____."
"If this texture were a person, he/she would be_____."

Repeat the exercise as above, listing the additional adjectives on the board.

Help the participants separate direct sensory perception of texture, indirect visual translation of texture and personal associations derived from textures by asking:
"Does emotional response differ when texture is examined with the tactile sense than when examined only visually? How?

What associations can relate to the various textures?

Can feelings be aroused through texture?

Does association with a particular texture effect the emotional response?

How would you use this texture? Where would you expect to find it in the environment?

Imagine yourself in any one room surrounded with a particular texture. What would be your emotional response?"

B. Creating textures

Demonstrate the process of creating a textured surface using clay. Have the participants select three effects (such as touchable, hostile, soothing) and make three corresponding textures with clay.

Different tools can be used, such as hands, a comb, and sandpaper.

Try a directional light on your texture. How does this alter it?

Referring back to the concepts in Teaching Strategy 4 on medium, agent and process, discuss with the class:

"Does the process with which this texture was created influence the end product? Why and how?

Does the process affect the personal value?

"Does the process used enhance or detract from its function?

Does the personal involvement of process add personal value to the object?"

C. Texture in the environment

Take the class outside and identify textures in the city. "Locate two places or environments in which the texture(s) complements or enhances the prescribed function of that situation. Does the texture add variety to the situations you've chosen? Does it enrich? Discuss how light plays on them. What would be your value judgement of the same environment without this texture? Explain.

"Do the building surfaces have 'texture'? Are the buildings themselves 'texture' in the urban environment? Do you see examples where the architect has used texture to create shadows?"

"Locate two situations in which the texture(s) used distract or contradict the intended use of the space. Describe why this is so. Can you suggest how you would change or add to the texture?"

Experiences

Ours:

We saved samples of textures to use in Teaching Strategy 7, Light.

Objectives Check List

Did the participant become aware of the two senses (tactile and visual) through which he perceives texture?

Was the participant's perception sharpened so that he consciously recognizes textures in his environment?

Did the participant fluently articulate his feeling responses to texture: is he becoming aware of the role positive/negative associations from past experience play in his response?

Was the participant able to analyze and describe a texture?

Did he create a texture to achieve a desired effect?

Further Exploration

"Discuss the use of 'texture' in music."

Resources:

The following references all illustrate texture as found in architecture:

Broadatz, Phil, Texture, Dover. 112 plates of photographed textures

Branch, Daniel Paulk, Folk Architecture of the East Mediterranean, Columbia University Press, New York and London, 1966.

Collins, George R., Antonio Gaudi, George Brazellier, Inc. 1960, New York.

Conrads, Ulrich and Sperlich, Hans G., Phantastische Architektur, Verlag Gerd Gatje, Stuttgart, Germany, 1960.

Substitution of one sense for another can mislead. In the following article, visual extrapolation of texture or form is shown to give erroneous results:

Elias, Hans, "Three-dimensional Structure Identified from Single Sections", Science 174, 993 - 1000, 1971. Misinterpretation of flat images such as those visually observed in electron micrographs can lead to errors in judgement of their form.

7. LIGHT

The role of light and color in perception

The participants manipulate light and color to demonstrate that these are principle elements in the ordering of visual stimuli and in the evoking of response to the environment.

Authors' Point of View

"Light" is the medium through which all visual stimuli are carried. What we call "color" is light waves having specific energies. We are only beginning to recognize how essential light is to life itself. For example, it controls metabolic and glandular functioning. The physical reaction as far as vision is concerned is primarily the impact of electromagnetic radiation on the end organs of our eyes.

We tend to be far more aware of the psychological impact of light/color than of its physical impact. Our psychological response is triggered by light/color combined with many other variables. A black room is cosy if it is a warm movie theater; it is scary if it is a cold prison cell. Light/color cannot easily be separated out of a particular context for discussion. Neither can can color be considered as separate from light. However, in common usuage, we talk about "light" and "color" without ambiguity. And we can make observations about the effect they have on us in specific instances.

For example:

Light and color support and evoke particular moods: Restaurants encourage fast turnover with bright colors and lots of light. Bars encourage lingering with dark colors and minimal light. Boris Karloff movies would have little impact of terror and suspense if the characters and sets were dressed in gay colors bathed in light.

Light and color effect our perception of the form of objects: The facade of Le Puy cathedral appears more and more three-dimensional as the sunlight illuminates increasing portions of its surface.

We see things that are not there: Stare at any intersection of the white lines. It appears white, but at all the other intersections you will "see" fuzzy gray spots.

The contrast of a dark contour around the moon on this vase causes the moon to be "seen" as lighter than the sky. If the dark area is covered, the reverse will be seen to be true.

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Materials

A roofed, semi-circular or three-sided space, perhaps one of the cardboard spaces built in Teaching Strategy 2.
Textures made in Teaching Strategy 6
Lights: portable theatrical lights or hardware store spot lights
Colored gels
Butcher paper
Color: white, black, red, blue and yellow water-base paints, brushes and/or rollers
White, black, red, blue and yellow tissue paper, thumbtacks or tape, may be substituted for the gels and paints.

Learning Experiences

A. Responses to light/color

1. Introduction

To introduce the topic of light/color, explore the associations people have to color:

"'Black' reminds me of_____.
'Red' makes me feel_____."

Record these associations on the blackboard.

"Are you finding that there are both pleasant and unpleasant associations with each color?

What are your associations with absence of light, that is, 'dark'?

Why is the loss of the visual sense so overwhelming when we have four other senses left?" (Texture, shape or form are changed by light, but can also be directly experienced through some sense without light. Color cannot be.)

Poll the class, asking which of their five senses they would be most reluctant to give up. Why do they think so?

2. Manipulating light and colored light on large scaled textures

Choose a semi-circular or three-sided space saved from Teaching strategy 2 and make the interior white. One way to do this is to tape onto it, white butcher paper.

Using lights and colored gels, change the white interior successively to red, yellow and blue.

Discuss and record on the blackboard the feelings associated with primary colors.

"Account for the personal biases associated with your responses to these colors.

What other colors do you react to strongly? Can you analyze why you have such a strong response?

How and why do the reactions of one person differ from those of another? Why are so many reactions similar?"

Ask one of the participants to sit in the space. Light his face with, in turn, red, blue and yellow.

"How does the color affect your feelings about the person's character or mood? Can you with light make him 'brooding', 'happy', 'angry' with no change in facial expression?

Why are red, yellow and green chosen for street lights?

Why are street freeway signs being increasingly made in green-blue instead of yellow? Are all of them? Or is it just certain types of signs?"

B. Use of light and pigments on textures to change their visual effects

Cover large surfaces of one of the personal spaces with crumpled white butcher paper or successive colors of tissue paper. Beginning with white, change the color with gels or tissue paper.

"How does lighting effect the texture? Does it compliment it? Why? Does it contradict it? How?

What feeling does the total lighted texture produce? Why?

How does color effect the texture?"

Repeat this exercise using clay textures saved from Teaching Strategy 6. Use both white and colored lights. Change first the direction, and then the intensity of the light and observe any differences.

C. Manipulating light/color and color pigments to alter space

Ask each participant to intensify the emotion evoked in their personal space (built in Teaching Strategy 2) by adding color using the paints or tissue paper.

Suggest experimenting with the lights and gels to see if they can even further intensify the emotion or produce an entirely different effect.

Ask the participants to experiment with contrast. "Experiment with various color combinations. Notice how the choice and relative amount of a second or third color alters your perception of the first color and of the whole. Note the effect of differing light intensities and position of light source.

Experiment with each other as 'visitors'. When you interview your visitor, try to learn from him what part, if any, of his response he is bringing from his personal past experience and what part appears to be a 'universal' reaction."

D. Light/color in the environment

Discuss and list on the board some of the possibilities of the imaginative use of light/color in the environment.

"What are some situations in which the color(s) enhance the esthetics or function of that place? Why?

Think of situations in which the color(s) contradict or hinder the intended function or esthetics of the place. Explain why.

Think of your favorite room. How does light come into it? From how many directions? Does the light ever change? Does the quality of the room change if the light changes? Is it a 'daytime' room or a 'nightime' room or both? Why?

How can light be used to define or articulate space in this classroom similar to the way we use walls to define and enclose?"

Our Experience

Learning Experiences A2, B and C can be carried on simultaneously in different parts of the room so that all participants can be actively involved. The participants enjoy and get a great deal out of experimenting at the three stations. In order to focus the Teaching Strategy, it is necessary to bring the group together fromally for discussions A1 and D.

Objectives Check List

Was the participant able to demonstrate different effects by manipulating the light source and its intensity?

Was he able to articulate the effects of his manipulations?

Was the participant able to articulate the effect of different color combinations which he created?

Further Exploration

On a sunny day outside, draw an object or part of a building facade at three different times to study the modulation in form under various angles of illumination.

Design a mural for an exterior urban wall of a clothing store, a food manufacturer or a warehouse using color to enhance the building's form. Write a sample letter selling the merchant on the value of buying your mural for his building.

Select one of the activities involving the manipulation of color pigments or light and have participants design a systematic experiment using a control group. Hypotheses should stem from previous observations. Ask them to try to ascertain whether or not their hypotheses were validated more often than a chance correlation (0.5)

Resources

Birren, Farber, AIA Journal, pp. 16-19, Aug. 1972. Color and Man-Made Environments, 1. The Significance of Light. (Biological implications of artificial environments.)

Ibid., pp. 35-39, Sept. 1972. 2. Reactions of Body and Eye. (Biological, psychological and psychic effect on man of the use of color and light in man-made environments.)

Itten, Johannes, Art of Color: The Subjective Experience and Objective Rationale of Color. Reinhold, N.Y. 1961. (Students interested in further exploration will find Itten's works particularly valuable.)

Ratliff, Floyd, "Contour and Contrast", Scientific American, June 1972.

Strong, C.L. "The Amateur Scientist", Scientific American, March 1971.

Wurtman, Richard J., "The Effects of Light on the Human Body", Scientific American, p. 68, July 1975.

8. MOVEMENT

Movement effects perception

Exercises introduce the dimension of movement as it relates the individual to his environment

Authors' Point of View

The static orientation of previous centuries has been displaced by the twentieth century idea of the individual in dynamic, constantly changing, interaction with his environment. Historically, the way of thinking about space was very static, object oriented and constant in time. In our culture, movement in and through the environment is the dominant manner in which we experience our environment. Movement in space and time is a way to perceive more holistically than is possible standing still.

As he moves through it, the individual perceives his environment by sight, to a lesser degree by hearing and touch, and by the movement of his muscles and joints which is "felt" by internal kinesthetic receptors. His perception as he moves is also colored by association based on past experience.

An individual experiences movement by comparing his own velocity, size and distance with that of the environment which he perceives as being stationary. He visually interprets moving objects in the environment as rigid structures in relative motion. He himself is never completely static: his eyes, muscles or other body parts are continuously in motion although he is seldom aware of this motion.

Because our interaction with the environment is dynamic, any design, whether on the scale of a room, a neighborhood or metroplex, must be predicated on movement. Conversely, the design elements of any particular space define and limit one's movement through the space. Similarly, the placement of stationaryelements such as the windows in a building facade, can be used to control the movement of a viewer's eyes. For this to work as a successful design element, the velocity of the viewer must, however, be taken into account. The faster he is moving, the less detail can be grasped and therefore the larger the object must be to be comprehended; thus the relative sizes of street and freeway signs.

Materials

Boxes or tables which can be put together to create a height equal to the average eye level

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Two sets of three identical geometrical objects at least eight inches in one dimension. One set should be of very simple form, e.g. bricks or children's building blocks. The second set should be objects of slightly more complicated form.

Select an outdoor space which will encourage various kinds of movement in and through it.

Select a five or six block route to a convenient meeting place such as an ice cream parlor.

Learning Experiences

A. Effect of movement on perception

Set up a platform so that the top surface is eye level for most participants.

Place three identical articles in a cluster at the center of the platform. Ask the participants to walk around the objects at an increasing velocity and articulate their perceptions to you. Discuss their perceptions in terms of the concepts outlined in Authors' Point of View.

Repeat with sets of slightly more complicated objects.

B. Movement in space

"Traditionally, reality was perceived and thought of as static. This was true in the world of design as well as physics. Today prevelant thinking views reality as dynamic and relative. This is also reflected in our design. For instance, balanced asymmetry is often used instead of symmetry. As we walk to _____, find and point out examples of each. These are available at different scales ranging, for example, from the degree of symmetry of the street pattern, to the overall building form, to the window placement and to the fine-scale pattern or texture of the curtain fabric.

Identify design elements at different scales which suggest movement--a row of trees, a curving street, slanted lettering on a signboard."

Arriving at the outdoor site:

"Explore this space for five minutes. Determine how the space predisposes you to move through it. How do your associations with this

Calling the group back together:

"How do your associations with this space cause you to move? For example, did your past experiences with creeks, trees, hills, influence the way you moved in this new space? What kinds of body movement did you use? Did you walk, run, swing your arms? Compare the movements of the group in this space with the way in which space is filled, cut up and defined by body movement in dance.

Sketch the space you have just been in. Diagram your path through it. Mark the points at which you stood still. Compare your sketch with those of other classmates. In what different ways have each of you manipulated this space by your body movement through it? Have you all 'cut' the space into the same shapes and volumes? How did the numbers, clusters, directions of movement and noise generated by your classmates define and alter the space?

Now examine the man-made elements in the space, such as buildings, walls. What decorative elemtns can you find that suggest movement?" (arrows, super graphics, wavy patterns---) "Do any of these elements 'force' your eyes to move in certain ways? Experiment by consciously trying to avoid the pull on your eyes to follow a curve, an arrow...

Identify static versus dynamic elements of design in this space. Which design elements have been used to support movement and which have been used to create a static, formal composition? Can you determine whether the more dynamic design elements were built more recently than the static elements?"

"In what ways can you yourself create the illusion of movement?" (converging lines, optical illusions...) "Work out as many examples as you can on paper. Explain how and why each illusion works."

C. Perception during normal movement

There are several purposes to this exercise. Primarily, it helps start the participant noticing more in his environment. Depending on the route chosen, the exercise emphasizes that too little order (chaos) is not memorable and is often disorienting. Conversely, it can emphasize the sterility and boredom of too little variety. (See Teaching Strategy 5, Learning Experience B.)

It also demonstrates that perception is a function of velocity (one sees the same things in different patterns walking and riding in a car).

It starts the participant "mapping" his perceptions - a desirable skill - but also is a revelation of how little one "activates" of what he perceives.

(Not to be overlooked, is the variety and change of pace this exercise adds to the course.)

Invite the class, in groups of four or five, to take a specified route and meet you at a chosen spot such as an ice cream parlor. When the participants have all arrived, hand out a questionaire containing questions such as:

What kinds of functions were located along _____ street?
Was there any visual homogeniety to the street? What and where?
Was the route pleasant to travel? Why or why not?
How many city blocks are there between _____and_____?
Did the street width vary?
How many new buildings or construction sites were there along the route?
How many curves were there in the street?
How many patches of open space or unbuilt land did you see? What functions were taking place there?
What items can you remember as being designed for car velocity rather than pedestrian velocity?
What was your approximate velocity along this route?
Draw a map of the route showing the above features as accurately as possible.

After the class has taken the same route back to the classroom, have them again fill out the questionaire.

"What could you modify or add to this route to make it more ordered and memorable? (See Teaching Strategy 19, Further Exploration)

Our Experience

Participants should do Learning Experience A one at a time so they are not distracted from reflecting on what happens to their perception as they move. More than one table can be set up, if the class is large. Participants who have finished the exercise can act as instructor to following participants.

It is important to structure carefully the many outdoor activities in this Teaching Strategy. The lack of clear direction disorients participants.

Learning Experience C could be taught, alternatively, as part of Teaching Strategy 3.

Objectives Check List

Did the participant articulate the change in his perception of objects and their relationship to each other as his velocity increases? Was he able to relate this experience to a large scale environment (a room, a neighborhood...)?

Was the participant successful in creating the illusion of movement? Was he able to explain how and why it worked?

Further Exploration

"Analyze the movement patterns in your own residence. What traffic patterns exist for normal, day to day living? What traffic patterns do you find if your house is filled with a large cocktail party crowd?

Analyze the traffic patterns also in public spaces such as in a shopping center.

Design a series of signs for a street which will be suitable for walking, driving and speeding velocities of movement.

Explore the illusion of movement:

Prepare a sheet of thirty numbered squares which can be mimeographed, cut and made into a "man running" hand movie. The participants might draw stick figures for this purpose.

Give each participant a "man running" sheet, asking him to cut out the numbered squares and put them together in order with a 2 1/4" spring "Boston" clip. "Play with your movie and analyze what you observe. What happens? What control do you have over the 'movement'? What is the scene at fast speeds?" (a man running) "at medium speeds" (a man dancing), "at slow speeds?" (different men posing) "What does this tell you about perception?" (It is effected by velocity, i.e. rate of change.)

"When the velocity of the squares is very low do you still perceive movement? What sensations do you have when you run the squares backwards? Do you feel any disorientation or discomfort?" (A little discomfort is fun--such as here. A lot, is disturbing.)

Read the bock by Lawrence Halprin. Based on Halprin's ideas, try "scoring" the group experiences of Learning Experience C.

Read the article by Gunnar Johansson and repeat several of his visual perception experiments.

Resources

Halprin, Lawrence

Johansson, Gunnar, Scientific American 76-88, 1975.
"Visual Motion Perception"

An interesting explanation of why moving stimuli are not perceived as blurs.

9. SCALE

Perceiving size in relation to self

An environment for Martians--a design problem to show how the concept of scale is used to provide orientation, enrichment and communication.

Authors' Point of View

We perceive with ourselves as our own reference point. Scale is the perception of the size of an object relative to ourselves. Proportion differs from scale in that it is the relationship two objects have with one another or the relationship an object has with its context.

Perception of scale involves both close and distance sensory receptors. In our society visual interpretation for the other senses is by far the dominant means of perception, particularly with regard to scale.

Scale is important because:

It involves a perception of measurement, thereby acting as a tool for personal orientation in the environment (time and space). (For example, if the scale of a city changes as it grows, the eye is able to register a difference between "now" and "then".)

It can be used to communicate messages to individuals in a particular context: for example, a high throne can achieve a feeling of humility or powerlessness for an individual in the presence of a king.

Scale and proportion can be used as tools to help order the environment (for example, by building all the homes in a neighborhood of similar size). Enrichment and variation in the environment can also be achieved by careful use of differing scales. (For example, a pocket park surrounded by high rise buildings.)

Scale is a man-made device used by man to make him feel comfortable in his relationship to objects.

Man's perception of scale has periodically altered. The variables which cause the differences between one era's sense of appropriate scale and another era's are 1) man's view of himself in relationship with time and space and 2) the technology he has available to transcribe the ideas into physical elements.

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Our age is concerned with the appropriate scale or proportion for a much wider r nge of activities than heretofor. In our mobile society appropriate scale for individuals in motion at different sp eeds is very important: it effects safety as well as efficient functioning and quality of experience.

Materials:

butcher paper
duct tape
masking tape
cardboard
straight edge
marksalot pens
shears
ladder or some way to hang paper from the ceiling
A large room is preferable.

Learning Experiences

A. Martians

Give butcher paper to the participants and say something to the effect of:

"Design this room so that it will function for our guests from Mars exactly as it has been functioning for us. Design it so that they can use it with the same degree of comfort as we use it.

Our problem is two-fold: 1) our guests are like us in every respect except one - they are two feet tall, 2) the room must be designed so that we can use it at the same time as the Martians are using it."

Discuss the participants' solutions, what they did and why they did it that way. "How did you arrive at your solution? Did you visualize yourselves as Martians? What activities did you consider yourselves as sharing with the Martians?"

B. Doorways

Begin a discussion on the concepts "scale" and "proportion". Use the blackboard to record key words and phrases. For convenience, we have chosen the following as our operating definitions of the two words:

Scale denotes the psychological perception of size an individual senses as his relationship to an object.

Proportion is the relationship two objects have with one another or the relationship an object has with its context.

Discuss the idea that different entrances are designed differently for various functions. One of the differences can be size in relationship to human size and that this use of scale can be employed to transmit a symbolic message such as, the ceremonial entrance for a medieval Pope and the smaller door for people often placed to one side and encased in one of the huge ceremonial doors. (Prior associations register the doors as symbolic.) Other entrances could be 1) a door appropriate for a small, cozy flat, 2) an entrance appropriate for the Queen of England, 3) a boutique shop, 4) United States President, 5) a supermarket, 6) an entrance to an amusement park, or 7) an entrance to a park which will permit walkers, bikers, horseback riders and automobiles to enter without obstructing one another. "What other kinds of entrances can you think of?"

Ask participants to work as individuals or in groups and assemble butcher paper or cardboard sheets into a surface at least 10 - 15' high by 8 - 10' wide.

"We are going to design entrances which use scale as a primary carrier of a symbolic message. Choose a functional and symbolic intent to convey in an entrance. Write it on a signed card and hand it in. Now, design your entrances only in terms of scale and a basic shape. Leave details of decoration until later in the period. Begin by drawing a scale figure at least 3' tall".

Help each participant execute his original design; discourage changing to another intent. Emphasize the decision-making process rather than the final product. It is helpful to work first in pencil.

After the groups have finalized their basic designs, suggest "In order to further reinforce your message use other design elements such as texture, color, line, pattern, rhythm, balance and symmetry on your entrances."

Ask the participants to select an entrance that seems to work particularly well, and one that does not (perhaps choose from another class' work).

Discuss and compare these two entrances.

"What messages do the scale and basic shape convey?" (Compare with the designer's intended messages.) "What other elements has the designer used to amplify his message? Do any of the elements of decoration seem 'out of place' in relation to the basic messages? What associations do you have to the entrances?" Discuss each entrance in terms of both scale and proportion.

Now ask each participant to visit the other entrances designed by class members. Ask the participants to list the adjectives they associate with each entrance, leaving a card so that the designer may compare it with his original design intentions.

C. Scale and proportion in the environment

'Find a mall or street and analyze the facades along it, first for proportion and then in terms of any other variables we have studied.

"Analyze the scale of the street in terms of your rate of movement. What size objects (house window, door knob) do you easily perceive from a car at 30 mph; on a bike, while walking? How do the problems of scale and velocity relate to the design of signs for an airport complex? In what ways has scale been used symbolically along the street or mall?

Experience

Ours:

One architectural class made small furniture for their Martian visitors out of the cardboard scraps in the room.

Learning Experience A sometimes generates very fruitful discussions of cultural differences.

We have found that classes learn most while critiqing a very well designed entrance.

Objectives Check List

Are the participants able to differentiate scale from proportion?

Do the participants have a conscious awareness of and ability to articulate:

the effects on them of the use of scale in a particular situation

what they consider is the appropriate scale for various kinds of situations?

Have the participants acquired tools with which to analyze scale on both personal and social levels?

Are the participants able to manipulate scale in order to achieve a predetermined effect?

Further Exploration

"Describe how scale and proportion are applied in your clothes."

Ask the participants to put together a slide show to illustrate how scale can be used symbolically.

Resources:

Asimov, Isaac, the Fantastic Journey

Good Design, Bad Design

10. SYMBOLS

Short-cuts to essential information

Recognition of the advantages and difficulties of symbols as communication tools leads to the ability to analyze the personal and general symbolic content of the environment.

Authors' Point of View

Each individual's self-image is in part defined and enhanced by his personal (and his society's) relationship with the heritage and with the universal values of his historic culture. Symbols are a means by which human beings relate themselves to, and orient themselves in, time and space.

Change characterizes our lives. Certain physical symbols which remain constant can be a way of fixing time, of making it stand still. A symbol may also be a psychological tool for the individual's orientation by conveying to him a sense of his roots.

Symbols, both verbal and non-verbal, are means of communicating and thus carry associative messages. Associative patterns are learned on an individual level, on a family level, and on a cultural level.

A symbol may relay simple information or directions. A symbol may also evoke a highly emotional and personal response, and thus call forth many associative patterns from many levels. Because associations are so abundant, a symbol is a shortcut to essential information. Symbols may have highly specific meanings to individuals (families or cultures) or they may have universal meanings.

A specific symbol has a particular meaning to a particular individual based on his history of experiences (associative patterns) and the context of that symbol.

The non-verbal symbols significant to our culture are both man-made and natural. Many sounds, smells, forms, textures and body movements have significant symbolic meaning in our culture. Symbols are a language one needs to learn and use.

Materials:

35 mm slides or pictures of the flag in various contexts
Pictures of symbols such as road signs and other designed symbols of less obvious meanings.

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Learning Experiences

The materials suggested above can be used to help define symbols and to initiate the group discussions.

Begin by asking the participants the following questions and recording key phrases of the answers on a blackboard. Later the participants can return to this board and enlarge upon the ideas.

"What is a symbol?" "Why do you use a symbol?"

"How do you use a symbol?"

"What does a symbol do for or to you?"

"What kinds of symbols are there?"

"Perhaps personal symbols have the most intense meaning for us. Fantasize that place you consider home. Imagine your feelings if you saw it burning down. What would you try to save? Does this object have intrinsic value or symbolic value to you? What sentiment does it have and why?

What does 'home' symbolize? Why do we have a strong feeling-relationship with it?" (Of the many points which will be brought up, one in particular should be dwelt on--the home is a physical representation of one's identity or identity development.)

"What are some of the physical symbols of the town or city you grew up in which you relate to personally? Are there any natural symbols of your town or its region to which you personally relate?" (If you don't get much reaction from young students, ask them to imagine the same problem at age 35.)

Break up the class into small groups. Assign each group one of the following categories of symbols. Ask them, in class, to discuss, list examples of, and later to present their conclusions to the entire group.

1. Personal/historical

   "Of what value, aside from occasional use, are the old family Bible or family chest, both often stored in the attic? What do they symbolize?"

"What are some man-made objects which, through your family connect you in time? Connect you with history? What are some natural symbols that connect you and your family in time? (Perhaps there's a family vacation house identified with distinct natural characteristics of a particular region.)

2. Societal/Personal Symbols

"What are some symbols of our society?" (There will be many mentioned. Eventually someone will mention the flag, which is a good symbol to emphasize the importance of symbols to individuals and society and why they should be preserved.)

"What does the flag mean to you? On how many levels do you relate to it?

Does it have different meanings to you in different contexts? Look at the slides or photographs of the flag in different contexts and discuss how the context effects the message.

Of what use is such a symbol to a person? To a society?" In what ways does it help provide identity in time and space?"

3. Symbolic space for social rituals

"What are some of the activities that we in our society do in groups which we all generally associate as being characteristic of our culture? These activities can be said to be symbolic of our culture. What are some symbolic activities that you associate with other cultures?

These activities must take place <u>someplace.</u> They must have "containers" in which to be carried out. What are places associated with some of these activities? A historical example would be the Roman coliseum. Do the places themselves, as well as the social rituals, then take on a symbolic quality?

How is space used symbolically?" (big office for the boss; secretary outside office - symbolic of his and her position and of boss putting someone between him and the public)

4. Societal/historical/regional symbols

"What man-made symbols represent to us today the historic

struggle of the plainsman with his physical world?" (barbed wire fences, silos, court houses)

"What are some natural symbols we associate with the plains regions?" (plains of grass, scrub trees, 'blue' northers)

"What are some man-made and natural symbols of some other region in the United States?"

5. Societal/historical/universal symbols

"When you think of our society and culture in a historic continuum, what are some of the man-made symbols that come to mind?" (Roman Forum, the Parthenon, great cathedrals, the Lincoln Memorial, the Statue of Liberty)

"These symbols are often interchangeable with symbols of our cultural inventions. What are some symbols of the milestone in human development?" (Eiffel Tower, airplane, automobile, space capsule)

"What are some things in nature that symbolize a continuity with our past?" (a Redwood tree, dinosaur tracks, the great forests of Siberia)

"What are some symbols of the Eastern cultures?" (China Wall, Japanese pagodas, Taj Mahal)

6. Direct sensory/behavioral symbols

"Body language is a very important form of communication. What body movements carry a symbolic message in our culture?" (eyes - raised eyebrows, rolling eyes; arms - stiff arm salute;)

"What sounds carry a symbolic message in our culture?" (sirens, bells, chimes, whistles, jack-hammer) "Relate this to the built environment. Why is it so enriching to have sounds in the environment ?

What tastes or foods carry a symbolic message?" (peaches - peachy; lemon - clean, fresh)

"What smells carry associative messages?" (carnival food; green house; all the artificial scents used to "create an atmosphere ")

7. Informational/identification symbols

"What are some uses of form to convey symbolic messages, for example, symbols used by business for identification? (These symbols can be literal: hamburger-shaped building; or purely associational: Polar Bear - ice cream.)

"What are some visual symbols used to communicate directions or information?"

Think of some designed symbols (e.g. map, weather, traffic) and each write down what he thinks the visuals are saying. Compare to see if each member of the group agrees on the designer's intent. This demonstrates the general, as well as the specific, graphic problem involved in communicating to the general public through the use of visual symbols.

It is important for us to come to grips with our need for good visual and graphic design to clearly (and in many cases safely) communicate information. "Is the particular symbol memorable? How well does it associate with the intended message?"

Ask each group to present briefly their category of symbols to the entire class, and to elicit other examples from them.

Experiences

Ours:

Adult groups very quickly grasp the nature and use of symbols. Younger students take much longer. For them, a follow-up activity is almost necessary to help coalesce this material. Their results can be presented as part of the next Teaching Strategy, Designed Objects.

Objectives Check List

Can the participant give examples of various types of symbols?

Can the participant analyze the personal symbolic content that various objects, people and places have to him?

Further Exploration

Each participant, as preparation for Designed Objects, bring three objects having a strong symbolic content.

Design a symbol of school, the class, the city, etc. in any medium. Display it at the next class with a concealed statement of what you have tried to symbolize. Have each class member write down the meaning of this symbol to him, and compare it with the intended message.

Analyze traffic signs and advertising signs for their clarity of message and visual appeal. Design an alternative sign you prefer.

Work out a slide show illustrating various kinds of symbols.

Write a history of the peace sign which includes its acceptance or rejection by various groups.

Resources:

Fast, Julius. Body Language, Pocket Books, N.Y. 1971.
The use of behavioral symbols.

11. DESIGNED OBJECTS

Perceiving wholes and analyzing components

The participant learns to articulate his personal response to an object and to evaluate all its components as they contribute to the whole object.

Authors' Point of View

Any object may be thought of as a whole composition to which form, function, texture, color, scale, process and symbolic content contribute as components. We tend simultaneously to synthesize and analyze anything we experience. This is usually a subconscious process. Perception of wholes is limited by our ability to perceive consciously a finite number of elements simultaneously.

Therefore, a personal value judgement of an object is arrived at by a conscious or unconscious analysis of how well each of the components is done and how it contributes to the whole.

Personal associations from past experience can have an overwhelming influence on one's value judgements.

A designation of intrinsic "esthetic excellence" is a value judgement agreed upon by a group in a particular culture. This process minimizes the influence of personal associations.

Materials:

A great supply of objects exhibiting variety in shape, texture, color, and function should be collected; some should have historic value. Objects should be included of both good and poor esthetic value. Cups, bowls, pitchers, etc. are suitable.

The participants should be encouraged to bring items. (See Teaching Strategy 10, "Follow-up activities")

Learning Experiences

This exercise provides the participants with an opportunity to react synthetically as well as to put to use the analytical tools presented in the previous learning experiences.

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Display the objects for the group to view as they come into class.

List on the board the following words and elicit definitions of each:

shape, texture, color, mass, process, scale, symbol, form

Divide into groups of three or four participants each having an assortment of objects. It is important to keep these groups small in order to achieve the necessary intensity, personal reaction and individual articulation.

Suggest that one way to begin the discussion is to group the objects into those everyone "likes", those everyone "dislikes" and those on which there is no agreement.

Leading questions:

Context: Referring to the various objects in turn, ask "How do you like it? Would you like it in any CONTEXT? Is there any context in which you would dislike this object? What about a new 'far out' design. You have not yet placed it in a personal context. Can you always 'disassociate' your prejudices from it?"

Form: "What responses do you have to the SHAPE of this piece? What associations to the shape do you have? Pleasing? Unpleasant? Why?

Texture: "What responses do you have to the TEXTURE or combination of textures? Why?
How does the texture fit with the function of the object? With the shape? Do they complement, contradict, or are they in juxtaposition to one another?"

Color: "How do you feel about the COLOR or combination of colors? Why? How does the color work with the shape and texture?"

Mass: "What feeling of MASS does the object have? Is it complementary to the function or otherwise? What is your response to the WHOLE object?" (Here is an appropriate time to point out people's tendency to accept or reject a whole because of one or two of its qualities.)

Process: "What do you know about the PROCESS by which this object was made? Does this make a difference? Why?"

Scale: "What about the SCALE of the object? Is it appropriate to its function?" (tiny cups for espresso; large cups for coffee)
"How does the scale work with the design?" (If it is a small object, is its texture also small?)

Symbol: "What does the object symbolize to you? Does it have a historic, a cultural, a personal symbolism? Does this make a difference in your response to the object? Why?"

Experiences

Ours:

We have found that participants who are able to initiate activities and comfortably articulate their thoughts can work in small groups alone. Those who have difficulty initiating and articulating by themselves do better working with the instructor.

Groups will probably want to exchange items discussed with other groups.

In this teaching strategy, the participants, beginning with a personal statement "I like it", "dislike it", expand the basis on which they make judgements by learning 1) to analyze the relationship of the components of an object to the whole and 2) to articulate the basis for their value judgements.

Objectives Check List

Is the participant able to perceive an object and articulate his feeling response to it?

Is the participant able to perceive and discuss:

the various components, their effects on him and why they effect him as they do.

how the conponents work together to form the compositon

how the composition relates to the functions of the object?

Is the participant able to articulate his evaluation of an object and explain how and why he has drawn his conclusions?

Further Exploration

Follow-up assignments:

Ask the participants to respond to, and analyze this classroom or the room in which they sleep. Requiring them to do this in writing will help crystallize the concepts of this session and give them a good base for the following, much more loosely organized, Designed Environments field trip. (Teaching Strategy 12)

Resources:

Barr, Alfred H. Jr., editor, Masters of Modern Art. The Museum of Modern Art, New York. Distributed by Doubleday and Co., Garden City, N.Y.
Designed objects in the collection of the Museum of Modern Art.

Downer, Marion, Discovering Design, Lothrop, 1947,
Excellent photographs used to evoke awareness of hue, pattern, and rhythm in nature and man-made objects.

Downer, Marion, The Story of Design, Lothrop, 1963.
Beauty as seen in designed useful objects and in art.

Rasmussen, Steen Eiler, Experiencing Architecture, Cambridge, Mass. MIT Press, 1962.
A lucid introduction to the excitement of architecture.

12. DESIGNED ENVIRONMENTS: Field Trip
Interplay between environmental components and sensory perception.

A field trip is taken to compare two environments having the same function.

Authors' Point of View

To design or evaluate a small environment such as a church is more difficult than analyzing an object but the same process is used. Environments may also be thought of as compositions made up of parts. In these small-scale environments, the parts are the furniture, the windows, the landscaping, which, when well-designed and successfully combined, can be judged as "good" or "excellent".

"Excellent", "successful", "well-designed" are value judgements much more difficult to make about even a small environment than about a teacup. The individual must respond synthetically to a much larger whole experience and analyze a much greater number of parts and their components in terms of more complex criteria.

In addition to form, texture, scale, environments must be judged for their qualities which aid or detract from living processes. A particular environment must, for example, be safe, provide shelter and arranged to facilitate the functions carried out within it. It must also provide satisfaction--pleasure, rest, excitement--for its users.

Materials:

Two houses (small churches, schools or other small-scale environments of similar function) in which the qualities of the environmental parts are unusual enough to command the attention of the average person, and which offer some variety of types of spaces for comparison.

Transportation should be arranged so that the members of a group arrive at each site at the same time.

Learning Experiences

A. Field trip

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Divide the class into groups of five to seven.

At the selected sites, no two groups should be in the same space at the same time. Stagger the routes through the spaces and allow about fifteen to twenty minutes per area with six to eight spaces per small-scale environment. Ask the group to quietly observe the characteristics of each space and how it is used by the people in it. Allow about three to five minutes.

While in each space discuss with the group their emotional responses to the elements of design.

Leading Questions:

"If you had to choose one word to describe this space, what would it be?" (There are no 'right' answers.)

"What are the elements of design used in this space? How are they used to define order?" (space, color, texture, light...) "Is it easy to orient yourself in this space? Is the ordering too rigid to interest you?"

"Which element made the greatest impression on you? Why?"

"Are there any other elements which impressed you in some lesser degree? How and why?"

"How do these elements limit, expand or complement one another?"

"How would you evaluate the overall quality of this space? Is the level of quality appropriate for the activity that occurs here? Why?"

"If you could alter the quality of the space what would you do?"

"Can the space be put to a variety of uses?"

"In which space would you care to spend the greatest amount of time? Why?"

"What assumptions might you make as to the personalities and interest of the people who occupy this environment? What are the bases of your assumptions?"

Proceed to the second site. Follow the same procedures outlined above. The class should take time to compare the two environments. "How do they differ and why?"

Experiences

Ours:

This is a time to start the process of making personal value judgements. Some participants can incorporate your suggestions without feeling that the decision has been taken away from them. To them you can introduce factors which might lead to a different judgement. Other students just learning to express personal judgements need to be left alone for the time being. It is sometimes necessary for you to encourage participants to commit themselves, however temporarily, to a judgement. Any judgement, however, must be accepted by the instructor as a valid personal opinion whether or not it expresses "good taste" as defined by a recognized design critic.

In the context of this course, you the instructor, reflecting your membership in a particular subculture, are the one who ultimately defines quality. If you want the participants to learn your criteria for quality, then say so honestly and clearly. If you want them to define their own standards of quality, fine. But in the latter case you should proceed with the understanding that in helping them, there is no way (nor is it necessarily desirable) to eliminate your own point of view.

Objectives Check List

Did the participant relate his experience in these real environments to his previous classroom experiences?

Did the participant articulate, i.e. did he have both a synthetic and an analytic response to the quality and appropriateness of each component within a total environment?

Further Exploration

"Write an essay in which you recall the specific qualities of the visited environment in terms of the elements of space, value, proportion of wall and openings, light (real and artificial), materials, colors, objects or enrichment, scale, texture. The essay should also include the relationship of the inside environment to the outside and of the whole building to its physical context.

Following this Teaching Strategy the class could build a second space out of cardboard, e.g. Learning Experience C, Teaching Strategy 2. "Think of a particular quality (choose a word) for a second personal space. Be thinking of how you will build a space around this word."

Resources:

Rasmussen, Steen Eiler, Experiencing Architecture, MIT Press, Cambridge, Mass. 1962.

Rasmussen, Steen Eiler, London

Rasmussen, Steen Eiler, Towns and Buildings, Harvard Univ. Press, Cambridge, Mass. 1951.
Buildings as they have been used to shape cities.

Zevi, Bruno, Architecture as Space: How to Look at Architecture. Horizon, 1957.
An analysis suggesting that the essence of a building is the space it encloses.

13. PHOTO-INTERPRETATION
Analyzing man-made environments

A mid-term testing process: Participants photograph and discuss the relationships of elements of the man-made environment.

Authors' Point of View

The process of synthesizing and integrating observations and information are essential to environmental awareness.

Communication about the environment is difficult. Verbal communication is limited to language, a linear process in time. Language as symbolic activity constricts the ability to comprehend and communicate any experience.

Visual communication about environment also is difficult. It is a two-dimensional communication about a four-dimensional subject, if one includes the effects of time. The many stimuli other than visual are missing.

Sharpening the ability to articulate what is perceived and to make judgments is part of learning the decision-making process.

Learning to communicate one's decisions and the rational on which they are based is also essential. This process in itself can be helpful in learning to think both analytically and synthetically.

Materials

Rented or purchased Polaroid cameras and film. (Often participants can provide their own.) Allow 2 packs of film and a camera per group of 2 to 4 participants.

"Worksheets for Photo-Interpretation Field Trip" - a copy for each participant.

The instructor has the option of defining boundaries of an environment to be photographed or of leaving the choice open for the participants.

Learning Experiences

This session may be used as another learning experience or as a mid-term examination.

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A. Field Trip

Divide the class into groups of 2 to 4 participants. Give each group a camera and 2 rolls of film. Demonstrate loading and use of the camera.

Remind the class that although there are 24 items to be recorded, they should attempt to include as many items in each photo as possible.

"You will be asked when you return to explain why the picture you bring back illustrates the stated point. This the opportunity for you to demonstrate to what degree you have integrated all of the ideas we have previously discussed."

B. Presentation of Photographs

1. Group Discussion

Organize the class into discussion groups comprised of three of the field trip teams (i.e. 6 to 12 persons). Each team in turn present their photographs to the group for evaluation. The rest of the group should ask as penetrating questions as possible to force the team to justify their choice of examples.

2. Alternate: Participant interviews

The instructor should interview each participant separately, probing with him to uncover the extent to which he has integrated the ideas of the course.

The responses will be made from the personal context of the participant, as each individual perceives differently from everyone else. As the discussion progresses, helping this participant to find the larger, more general context, will add a significant learning dimension to the interview.

Experiences

Ours:

Working in pairs enhances the learning aspects of the field trip. Each individual's explanation of why a particular picture exemplifies a point will reveal the degree of his own understanding.

If the learning experience is used as a test, the class should be so notified in advance to forestall their hostility. We preceded the Teaching Strategy with a review, by handing out copies of the "Authors' Point of View" from the first 12 teaching strategies and/ or by issuing the worksheets in advance of the session.

There are no "right" answers in this exercise. We have found that discussion of why a particular picture illustrates a point produces a wide variety of explanations and afford the instructor a unique opportunity to understand how the participant perceives the course and its contents; how he integrates and what he has selected to 'learn' up to this stage.

Objective Check List

How many items on the list was the participant able to integrate into one picture? (The participants demonstrate how well they are integrating and relating material in the course to the degree they are able to exemplify a number of points in any one picture.)

Were the participants able to articulate why they made the decision that a picture exemplifies a particular point?

Further Exploration

If the following exercise is done at this time, the instructor can use it to compare with the reassigned exercise in Teaching Strategy 26. This will give some measure of the participants' achievement in the course.

"Describe your workplace. Analyze in detail its assets and faults in the total context of your getting to it and using it. Show how it could be improved with a breakdown of what you could do and what would have to be done by others. What would it take to make it ideal?"

14. NATURE

A basis for perceiving order

Working with an ecological model: A field trip in which the class looks for order in nature and begins to define systems as a means of studying nature.

Authors' Point of View

Man constructs his built environment partly on the basis of what he perceives in nature. Nature is the context of designed objects. Man's structures which are closely integrated with nature may be satisfying because of the integration of the man-made with natural surroundings.

Nature provides great order in her processes and rhythms. Nature presents us with infinite variety within this context. Nature can be viewed as a whole which is greater than the sum of its parts. We simplify and reduce nature to a group of its parts (an ecological model or system) in order to give limits within which nature can be understood.

Because nature is so complex, it is difficult to define a system to study. In the process of isolating a system to look at it, one is neglecting other parts of the total complex of phenomena called nature. These parts may be of equal or greater importance than the variables one has chosen to study. The ecologist has the professional responsibility to discover, assemble and interpret what he considers pertinent.

Materials

The instructor should choose an outdoor environment with as much variety in natural elements (water, vegetation, birds, insects, animals) as possible. An area with a minimum of man-made alteration is preferable. If possible, the area should have a variety of topographic relief features (hills, plains, dells, flood plains). The instructor should identify on the site either a physical shelter or a spot with natural "closure" - such as a grove of trees - in which discussions can take place.

A U.S. Geological Survey map of the area to be visited: scale, 1:24,000 with contours.

butcher paper and felt tip pens

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Learning Experiences

A. Exploration of nature and its parts

1. Let the class run free for about 20 minutes after first asking them to be able to sketch the land, and its contents when they come back.

2. When the participants reconvene with their raw data, ask them to compile a base map containing all this information. The class can draw their own base map or record on the USGS map.

   Ask them to add to the map data not readily observable which the instructor may wish to point out or elicit from the class. Such topics include: soil types and characteristics, major geological formations with a brief history, flora and fauna types and habits, rainfall and wind intensities, water systems and seasonal patterns.

   The class should compare their raw data with the contour information on the USGA map. "There may be discrepancies between your observations and the map. Why? How do such changes effect man the inhabitor, the builder?"

   (This is an excellent opportunity to discuss how time makes changes in the environment inevitable.)

   Ask the group to identify the natural systems that have caused changes in the land. Elicit from the participants such systems as water, air, vegetation, animals, insects. "The processes of interaction among these systems are most significant."

   Many of these processes can be deduced from reflection about the data. Although it is not always possible to have the expertise immediately on hand to validate inferences and the accuracy of deduction, the important aspect is that the participants understand the significance of this body of knowledge and the processes involved.

3. Now ask the participants to go to a new area, inspect it closely, enumerate the systems and then analyze the dependent relationships between each system.

   Return to the group and discuss the interdependency of the systems they observed. Lead the discussion to one of the interdependency of systems on a much larger scale (regions, continents, earth and universe).

"An animal's interaction with the environment is direct; man's is indirect, modified by intellect and culture.

"Do you consider yourself part of nature? What is the difference between our relationship to nature and that of the indians?"

B. Using the concept of systems to help solve problems

Select a location with some variety of terrain such as vegetation, rock and water. State as a problem for the class, "How would one go about 'studying' an insect (e.g. an ant, or an insect you see on this site) who lives in this 'world'?"

The point is to get the class thinking in terms of systems as a means of defining and solving problems. One way to do this is to ask:

"What are the forces operating on the insect?

weather
    wind
    rain
    sun
enemies
    animals
        man

"Where is his shelter?
"What is his food supply?
"What is his contribution to his environment?

"What we are laying out is a description of the insect in his environment, i.e. in his total system. We still must decide what aspect of the insect we want to study or research."

"If, for example, we choose to study the physical boundaries of his territory, we will have a complex sub-system which includes almost all the factors we have already mentioned. E.g. does the insect 'run' out of his normal territory when man approaches? We cannot discount man as part of our system until we can be sure he has no effect on it.

"If, however, we choose the effect of ambient temperature on the insect's water intake, we can remove it to a laboratory cage in which we can standardize the moisture level, food, light, etc. Holding all the variables constant except the one we want to study the effects of, we can change the temperature incrementally and measure the amount

of water ingested.

"Let's try the harder problem of studying the insect's shelter. Are there any variables you think we can ignore?" As individuals mention examples, get the rest of the class to challenge them. For example, if someone mentions temperature, one could ask if we can assume the insect doesn't dig deeper if it gets colder, etc. If someone suggests food supply, can we assume there is no relation of distance of shelter from the food source.

"You have now set up such a complicated system that in order to do research you are forced to make assumptions. For example, we choose to assume no influence by man (disturbing the soil, etc.), to assume shelter during temperatures between 40° and 90°, to assume a specified range of rainfall... In other words, we are confining our research to shelter under 'normal' conditions. This means we will find out probably very useful information about the insect by rigorously having defined a sub-system of the total system in which the insect exists. It would not be useful information, however, if we wanted to know the impact on insect shelter of a dam to be constructed downstream.

"In all cases of research this process must be gone through. The trick is to be sure that a variable which overwhelms all the others has not been assumed constant or negligible or overlooked. In addition, we must keep in mind in later applying the data, that to obtain it, we have selected from a whole, and this data probably is not applicable outside the limits we have defined. (Environmental impact studies have a big problem here in trying to make predictions about complicated interacting systems with limited time and funds.)"

"Nature is one of the most difficult subjects to study because in general, changes in one variable changes most of the others. To illustrate this point, each of you choose a variable to be - wind, rain, sun, soil, grass, etc." Now in turn have "rain" choose to fall or not to fall and indicate how much. Have each of the other variables predict the effect this will have on them. For example, "soil" will be washed into "stream" unless "vegetation" holds it tightly.

Conclude with a discussion of environmental impact studies. "How would you route a highway through this site? How big would you make it? What factors would you study? How would you go about it? What, if any, amenities would you include?"

C. Overnight Campout

An overnight campout gives the opportunity for the class to see this environment under extremes of light level, animal life, temperature, etc. It also provides a study of man's impact on the "wilderness".

1. Design in nature

"Select a naturally defined area and study it in terms of the design elements (color, texture, scale, line, pattern, form, balance, etc.) which are perceivable. Use a camera to record, if desired.

How do these elements depend on each other for the total affect on the perceiver?"

"Have we related ourselves well to this area?

"How could we have better integrated our man-made belongings with the area?"

"How could a designer/builder make a good translation of this 'natural' area into a permanent man-made camping area?

"What kinds of things should go undisturbed in that translation? Disturbed in a limited fashion only? How limited?"

2. Preserving the "natural" for man to see

"What impact have we, man, had on this environment?" This should be answered in minute detail - wood gathered, leaves pulled off, nuts eaten, stones thrown, etc. Then, lead to the larger issue of "What controls or limits must we put on our National Parks such as Yellowstone or Yosemite to preserve them for ourselves and future generations to see?" Try to get as thoughtful and specific responses as possible.

Consider sightseeing - vehicular, pedestrian, handicapped persons - shelter, food, toilet facilities, educational exhibits and tours, mobile homes (road widths), all from the point of view of perhaps the ideal nature experience - to be its discoverer.

Experience

Ours

General information about the area you live in is available at most city

or university libraries. You can compile this yourself prior to the field trip or assign participants to collectthis data. There will probably be discrepancies between the description of the area in general and what you find on your particular site. Ask the participants to notice these variances.

It is difficult to hold together the group since they are not used to an outdoor situation. They tend to wander away or go wild. Discussions are best held in a defined area so that there is some feeling of group closure in order to keep thinking and conversation focused. Keeping the number of participants in each group discussion limited to 12 also helps prevent wandering minds.

If possible, invite a biologist, geographer or geologist to join you as a resource person. He has expertise and a point of view to contribute that immensely enhances the exercises. He can also conduct group discussions thereby making it possible to keep the numbers of participants closer to 12.

This field trip must be held in good weather, but not too good. The effects of sun, wind, rain or a beautiful day overwhelm all other variables.

Objective Check List

Can the participant articulate how the patterns of his ordered environment are influenced by the patterns of nature?

Can the participant give an example of a "system" indicating those variables he has included and excluded?

How many "systems" and "sub-systems" in this area can the participant perceive?

Further Exploration

Using design elements you have found in nature, create something man-made. Put it in a natural context in such a way that it becomes a transition from the natural to the man-made environment.

Choose a two square foot outdoor area near your home. Keep a log, recording two or three times a week all the changes that occur. Continue your log at least through one change of season.

Resources

Bedichek, Roy, Adventures of a Texas Naturalist (Chapter on the water hole)

Carson, Rachel, Silent Spring, Houghton 1962. (The effects of our attempts

Carson, Rachel, Silent Spring, Houghton 1962. (The effects of our attempts to control our environment.)

Deevey, Edward S., Am. Scientist 48 #3, 415-30, "The Hare and the Haruspex: a Cautionary Tale" (The hazards of trying to control nature.) "Can you outline a series of steps which would enable you to make a decision as to how to control the over-population of lemmings?"

Lewis, Philip
(catalog of eco-systems)

McHarg, Ian L., Design with Nature, Am. Museum of Natural History, Natural History Press, 1969. (The interaction of man with nature.)

U.S. Geological Survey Maps can be purchased for less than $1.00 by 1) contacting the Department of Interior, Geological Survey Division in the nearest large city with Federal Offices or 2) by sending a request to Distribution Section, USGS, Federal Center, Denver, Colorado, 80225. If possible, describe the area you wish a map of by latitude and longitude. Other wise you may ask them to send you an index prior to ordering or describe the county, section of county and any nearby town. Maps of counties and of large cities are usually divided into several quadrants. You may need more than one quadrant to fully cover your designated area.

15. SEQUENCE OF SPACES

Building an environment for the study of sensory experience
Analyzing the relationship of parts to a whole

The group working as a team plan and build a series of contrasting spaces in cardboard in order to convey to a person moving through it some of the awarenesses which the participants have learned.

Authors' Point of View

All sensory perception is achieved by contrast. We perceive and remember the shape of one space by its contrast with another.

Our emotions are affected, consciously and unconsciously, by the varying qualities of space around us. The shape of space is one of the environmental qualities which affects our emotional response.

The process of decision-making is particularly cumbersome in solving environmental problems. Decisions generally are made by groups and often effected by conflicting points of view, personalities and pressures. These human processes effect any physical product or project. They are an on-going part of it. Interaction with the product continues as it is built and used in an on-going, evolutionary process.

Materials

Mimeographed lists of the concepts in Teaching Strategies 1 through 14.

Identify in the vicinity of the classroom a sequence of interior and exterior spaces having as much variety as possible.

Materials for building the space maze (based on 20 participants):
double-faced corrugated cardboard - approximately 20 4' x 8' sheets
duct tape - 5 100 yard rolls
matte knives
measuring devices: steel tapes, yard sticks
3' steel straight edge
50 yard roll of 3' wide white butcher paper
translucent fabric (bed sheet) - about 250 sq. ft.

Optional materials to be supplied by the participants:
tactile materials such as
carpet, tile samples, bricks, fabrics

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lighting equipment with or without colored gels
water-based paints and/or colored paper

olfactory materials such as
hay, natural vegetation - lemon, eucalyptus, etc.
artificial spray can scents

sound equipment such as
phonograph or tape recorder
tape of common sounds at both usual and unusual volumes
(traffic, water, trains, air hammers...)

Mimeographed diagram of the maze, prepared after it is completed, showing it as negative space.

Solid model of the maze or of a simpler space

Learning Experiences

A. Review

Pass out mimeographed lists of the concepts of all the previously taught Teaching Strategies.

Using the blackboard and encouraging the class to make notes, elicit from the group the main thrust of each lesson.

B. Sequence of spaces

Lead the class on a walk through a variety of spaces encouraging them to explore and to "feel" the differences. "Remember, you are always 'in' a space."

"Describe your feelings and your perceptions in each space.

"What factors are present in each space which cause you to alter your pace?"

In the classroom, have the class as a group sketch diagrammatically the sequence of spaces they have just experienced. (This is valuable in getting the participants to perceive space.) "Show how these spaces affected you and describe why you think this happened. Did some spaces relate to each other better than others? Why?"

C. Building a Sequence of Spaces

Outiine the project to the class emphasizing:

"This is a team project. Working together, the idea is to build out of cardboard and any other materials you wish to supply, a continuous sequence of spaces, designed to illustrate the concepts we've been experiencing. The spaces should be large enough for a person to go through them."

Decide and state the basis on which the project will be judged: for design, degree of intra-group cooperation, degree of participation, etc. To help focus the process, set specific goals for the class and yourself.

You can give structure by outlining on the board and setting a time limit for completion of each stage of this exercise, for example:

1. Discussion by the class of the impact of sequencing various prototype spaces.
2. Division into self-selected groups of 3 or 4.
3. Decision by teams of what each space is to be, how it will be built and how it will contribute to the whole.
4. Specification in writing the intended effects of each part of the sequence of spaces.
5. Review by the class of the problem of the whole maze with the help of a line drawing on the blackboard. If modifications are made, the written intentions should be corrected and kept for reference when the project is completed.
6. Building of the sequence of spaces.

Emphasize to the class that they must consider the relationship of one space to those adjoining it and must consider the whole from the point of view of pacing one's way through it.

Point out to the class that the overall maze must be inviting. Too much crawling on the belly, moving in the dark or changing levels has an overwhelmingly negative effect on those going through it. As another example, too many extraneous objects tend to diffuse the impression of the space itself.

D. Experiencing the space maze

The labyrinth should be so concealed that a door leads directly into it without revealing its exterior form or size.

Ask the participants to remove their shoes.

Ask the participants to go through the maze one at a time; to go slowly, and to remember what they experience and how they feel about it. (Visitors should not be given any clues as to what they will find.)

As each participant comes out of the maze, ask him to jot down his reactions to the experience as a whole.

"Try to recall as many of the spaces as possible. What were your emotional reactions to each space? What did each make you think of? What adjectives would you use to describe each?

"How were you able to remember these spaces? What effect did the sequence in which the spaces occured (high to low, light to dark...) have on your ability to remember these spaces?"

E. Second experiencing of the space maze

Ask the invited guests to be present at this session acting in the double role of participants and instructors.

Start the participants through the labyrinth again, one at a time. As each exits have him write his answers to the questions:

"What differences did you perceive while going through the maze the second time?

"Were your reactions to the spaces the second time in any way different from the first time? Explain.

"Try to draw a plan of the labyrinth from memory."

Divide the class into groups of twelve or less plus one or two of the guest instructors. Suggest they find an appropriate space in which to hold a discussion. Give each group a negative diagram of the maze.

"Compare sketches with the diagram and try to analyze whether and of the distortions were caused by qualities such as light and noise levels or your own 'feeling reactions' (anxiety, claustrophobia...) to experiencing the maze.

"How were you each able to mentally organize your memory of the

individual parts?" (Various sensory inputs; the shape of spaces is perceived by contrast.) "Did different people have different ways of perceiving? What were they?"

"What senses were used in perceiving the maze? List. Did the spaces usually each appeal preponderatingly to one sense, e.g. smell, tough, sound?"

Select two or three of the spaces to which there was strong reaction. "What emotions were generated by the space?" Compare individual reactions to the qualities of that space. Elicit from the group qualifying adjectives such as threatening, friendly, light, airy, joyful, dour, gloomy, low... "What effects could be intensified by altering the light, color, texture...? Give examples."

"How did the contrast of adjoining spaces effect your perception of a given space?

"In which particular space in the maze would you choose to spend the greatest amount of time? Why? In which the least?

"In which space would you rather be alone? Why? Have a conversation? Sleep?

"In which space did you feel the most comfortable with respect to your size in relation to the size of the space?" (Scale)

"What variations in movement, pace and level do you recall? Did the design of the maze control the rate of your movement through it?

"Do the parts of the maze contribute the the whole? Which, more or less successfully than others?

"Did you find it hard to draw the maze?" (Everyone does because it is difficult to communicate three-dimensional information on two-dimensional paper.)

"Imagine the labyrinth had been made out of living plants shaped as here, instead of out of cardboard. What do you think your reaction would be then? Would your reaction change to your least favorite space? Why? Would you be more or less bored going through a cardboard maze or a plant maze if you had to do it every day?

" When you think of the maze, do you think of it as completely finished, or are you constantly thinking of ways to make it better?

"What changes of level could have been used to get more variety of kinesthetic and proprioceptive experience?